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INDIAN CORN-HILLS IN MASSACHUSETTS

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I. HISTORICAL INTRODUCTION

THE fact that there are still in New England perfectly preserved and unmistakable remains of the small mounds or hills in which the Indians planted their maize and other crops, seems not to be generally recognized. Even for other parts of the country, reports of the existence of such "Indian garden beds" are very few. I. A. Lapham[1] tells of their occurrence in Wisconsin, and it is said that Cheney[2] found them in western New York. Sir John Lubbock[3] quotes Lapham. Lapham's description is as follows: In many places

> the ground is covered with small mamillary elevations, which are known as Indian corn-hills. They are without order of arrangement, being scattered over the surface with the utmost irregularity. That these hillocks were formed in the manner indicated by their name, is inferred from the present custom of the Indians. The corn is planted in the same spot each successive year, and the soil is gradually brought up to the size of a little hill by the annual additions.

In one of his localities,

> another evidence of former cultivation occurs, consisting of low, broad, parallel ridges, as if corn had been planted in drills. They average four feet in width, twenty-five of them having been counted in the space of a hundred feet; and the depth of the walk between them is about six inches. These appearances,

[1] *The Antiquities of Wisconsin*, 1855, pp. 19, 57; *Smithsonian Contributions to Knowledge*, vol. VII.

[2] On Ancient Monuments in Western New York; *Thirteenth Report of the Regents of the State of New York*, 1860, p. 40. The writers have not been able to verify this citation.

[3] *Prehistoric Times*, 1913 ed., p. 273.

which are here denominated "ancient garden-beds," indicate an earlier and more perfect system of cultivation than that which now prevails.

In another place,

the depressions or walks between the beds were about eight inches deep and fifteen inches wide.

As to the existence of such remains in New England, we seem to have only a statement by Jeremy Belknap, applying to New Hampshire, and a doubtful report from Massachusetts. Belknap wrote in 1792:

The remains of their fields are still visible in many places; they were not extensive, and the hills which they made about their corn stalks were small.[1]

The Massachusetts instance is mentioned in the Handbook of American Indians North of Mexico, which does not seem to take it seriously. Under the heading "Indian-corn hills," it remarks: "In Essex Co., Mass., according to Bartlett, hummocky land resembling hills of Indian corn."[2] The original description by Bartlett we have not traced to its source.

Mr. William M. Cotton, of Providence, informs the writers that when he was a boy, living in Pomfret, Connecticut, in uncultivated pastures on his farm there were numerous small mounds that were generally known as Indian corn-hills. Whether they still exist and are so known, we have not learned. We have personally investigated, however, two localities in Massachusetts in which the ancient "Indian corn-hills" unquestionably persist.

That there should be any traces left at the present day of the gardens cultivated by the Indians two hundred and fifty years ago and earlier, may at first sight seem incredible. But there are many fields in New England, probably some in every town, that have always been used by white men as pastures, and have never been touched by the plough. Any of these which may have been used by the Indians as corn fields would stand an excellent chance of having the hills indefinitely preserved, because of the way in which the Indians did their planting. The early settlers and explorers give interesting accounts of this, and we may advantageously

[1] *History of New Hampshire*, vol. III, p. 88.

[2] Vol. I, 607.

preface our own observations with quotations from them and others.

Although the cultivation of corn (maize) by the aborigines of the West Indies was observed and reported by the earliest of the discoverers, probably Samuel de Champlain was the first to give any account of this form of agriculture in New England. His first recorded observation was made during his voyage of the summer of 1605, at or near what is now Saco, Maine, his "Choüacoet." He writes:

The next day [July 9, 1605] Sieur de Monts and I landed to observe their tillage on the bank of the river [Saco river]. We saw their Indian corn, which they raise in gardens. Planting three or four kernels in one place, they then heap about it a quantity of earth with shells of the *signoc* before mentioned [the horse-shoe crab, *Limulus polyphemus*]. Then three feet distant they plant as much more, and thus in succession. With this corn they put in each hill three or four Brazilian beans [the kidney bean, *Phaseolus vulgaris*], which are of different colors. When they grow up, they interlace with the corn, which reaches to the height of from five to six feet; and they keep the ground very free from weeds. We saw there many squashes, and pumpkins, and tobacco,[1] which they likewise cultivate. The Indian corn which we saw was at that time about two feet high, some of it as high as three. The beans were beginning to flower, as also the pumpkins and squashes. They plant their corn in May, and gather it in September[2] (p. 62).

When in Boston Bay, about the mouth of the Charles, he records that

they brought also some purslane, which grows in large quantities among the Indian corn, and of which they make no more account than of weeds. We saw here a great many little houses, scattered over the fields where they plant their Indian corn (p. 67).

Reaching the harbor of Nauset on Cape Cod he says that they

went about a league along the coast. Before reaching their cabins, we entered a field planted with Indian corn, in the manner before described. The corn was in flower, and five and a half feet high. There was some less advanced, which

[1] "The tobacco of the New England Indians was *Nicotiana rustica*, not *N. tabacum*. The former is inferior, and now grows wild in old fields in some parts of the north, a relic of cultivation by the Indians."—*Mourt's Relation*, ed. Dexter, p. 36n.

[2] These quotations from Champlain are taken from the recent translation made by W. L. Grant (Oxford), which appeared in 1907, as one of the series of *Original Narratives*, edited by J. Franklin Jameson, and published by Scribner's. The pages here given correspond to this first edition.

they plant later. We saw many Brazilian beans, and many squashes of various sizes, very good for eating; some tobacco, and roots which they cultivate, the latter having the taste of an artichoke.[1] . . . There were also several fields entirely uncultivated, the land being allowed to remain fallow. When they wish to plant it, they set fire to the weeds, and then work it over with their wooden spades (p. 71).

When the Indians wished to clear forest land they did it in great part by help of fire, according to information obtained in the harbor of Gloucester, Mass.

Some of the land was already cleared up, and they were constantly making clearings. Their mode of doing it is as follows: after cutting down the trees at the distance of three feet from the ground, they burn the branches upon the trunk, and then plant their corn between these stumps, in course of time tearing up also the roots (p. 92).

The corn, thus grown, the Indians were accustomed to store in granaries situated nearby and placed partly beneath the surface of the ground. These are locally known as "Indian barns," and have been frequently located in the Connecticut river towns in Massachusetts [*e.g.*, George Sheldon, in the History of Deerfield]. These Champlain describes as he finds them at Chatham, Mass., on the Cape.

There is a considerable quantity of land cleared up, and many little hills, where they cultivate corn and the various grains on which they live. . . . All the inhabitants of this place are very fond of agriculture, and provide themselves with Indian corn for the winter, which they store in the following manner: They make trenches in the sand on the slope of the hills, some five to six feet deep, more or

[1] *Helianthus tuberosus*, Jerusalem Artichoke. Its history is thus described by Neltje Blanchan, in Nature's Garden: "In a musty old tome printed in 1649, and entitled 'A Perfect Description of Virginia,' we read that the English planters had 'rootes of several kindes, Potatoes, Sparagus, Carrets and Hartichokes'—not the first mention of artichokes by Anglo-Americans. Long before their day the Indians, who taught them its uses, had cultivated it; and wherever we see the bright yellow flowers gleaming like miniature suns above roadside thickets and fence rows in the East, we may safely infer the spot was once an aboriginal or colonial farm. White men planted it extensively for its edible tubers. . . . As early as 1617 the artichoke was introduced into Europe, and only twelve years later Parkinson records that the roots had become very plentiful and cheap in London. The Italians also cultivated it under the name *Girasole Articocco* (sunflower artichoke), but it did not take long for the *girasole* to become corrupted into Jerusalem, hence the name Jerusalem artichoke common to this day. When the greater value of the potato came to be generally recognized, the use of artichoke roots gradually diminished."

less. Putting their corn and other grains into large grass sacks, they throw them into these trenches, and cover them with sand, three or foure feet above the surface of the earth, taking it out as their needs require. In this way it is preserved as well as it would be possible to do in our granaries (p. 95).

The description "Of their Planted fruits in Virginia, and how they use them," which Captain John Smith wrote in 1606, is applicable also to this region.

The greatest labour they take, is in planting their corne, for the Country naturally is overgrowne with wood. To prepare the ground they bruise the barke of the trees neare the root, then doe they scortch the roots with fire that they grow no more. The next yeare with a crooked peece of wood they beat up the weeds by the rootes, and in that mould they plant their Corne. Their manner is this. They make a hole in the earth with a sticke, and into it they put foure graines of wheate and two of beanes. These holes they make four foote one from another;[1] Their women and children do continually keepe it with weeding, and when it is growne middle high, they hill it about like a hop-yard.

In Aprill they begin to plant, but their chiefe plantation is in May, and so they continue till the midst of June. What they plant in Aprill they reape in August, for May in September, for June in October; Every stalk of their corne commonly beareth two eares, some three, seldom any foure, many but one and some none. Every eare ordinarily hath betwixt 200 and 500 graines. The stalke being greene hath a sweet juice in it, somewhat like a sugar Cane, which is the cause that when they gather their corne greene, they sucke the stalkes: for as we gather greene pease, so doe they their corne being greene, which excelleth their old. They plant also pease they call Assentamens, which are the same they call in Italy, Fagioli. Their Beanes are the same the Turkes call Garnanses, but these they much esteeme for dainties.[2]

The season for planting, according to Belknap[3], was "when the leaves of the white oak are as big as the ear of a mouse." William Bradford, in his History of Plymouth,[4] says that Squanto "tould them excepte they gott fish and set with it (in these old grounds) it would come to nothing." *Mourt's Relation* (by Bradford and Winslow)[5] reports the same fact: "According to the manner of the

[1] "Four or five feet apart" is the spacing mentioned by W. Strachey, in *The Historie of Travaile into Virginia*, p. 116.

[2] *The Historie of Virginia, University of Glasgow Edition*, 1907, pp. 58–59.

[3] *History of New Hampshire*, vol. III, p. 93.

[4] *Massachusetts Historical Society Edition*, 1912, vol. I, p. 215.—A note by the editors on page 220 gives evidence for the fact that the Narragansetts "have good corne without fish." Possibly this may be the reason why we have never heard of the survival of the old corn-hills in Rhode Island.

[5] Ed. Dexter, 1865, p. 132.

Indians, we manured our ground with Herings or rather Shadds, which we haue in great abundance, and take with great ease at our doores." Edward Winslow[1] says:

The seed-time beginneth in midst of Aprill, and continueth good till the midst of May. . . . Mays, which our Indians call *Ewachim*, . . . will not be procured without good labour and diligence, especially at seed-time, when it must also be watched by night to keepe the Wolues from the fish, till it be rotten, which will be in foureteene dayes; yet men agreeing together, and taking their turnes it is not much.

Concerning the inexhaustible supply of fish for their purposes, George E. Ellis[2] remarks:

The alewives were abundant, not only in the Taunton river, but probably in all the rivers along the coast. The early settlers speak of the great quantities of them in the two rivers at Plymouth; and a brook running into the Mystic, near Harvard College, is still called Alewife brook."

Roger Williams[3] gives still further details of interest concerning the Indians and their corn fields.

From thick warme vallies, where they winter, they remove a little neerer to their Summer fields; when 'tis warme Spring, then they remove to their fields where they plant Corne. In middle of Summer, because of the abundance of Fleas, which the dust of the house breeds, they will flie and remove on a sudden from one part of their field to a fresh place: And sometimes having fields a mile or two, or many miles asunder, when the worke of one field is over, they remove house to the other. [Crows were a nuisance, then as now.] Against the Birds the *Indians* are very carefull, both to set their corne deep enough that it may have a strong root, not so apt to be pluckt up, (yet not too deep, lest they bury it, and it never come up:) as also they put up little watch-houses in the middle of their fields, in which they, or their biggest children lodge, and earely in the morning prevent the Birds. . . . The Women set or plant, weede, and hill, and gather and barne all the corne, and Fruites of the field. . . . When a field is to be broken up, they have a very loving sociable speedy way to dispatch it: All the neighbours men and Women, forty, fifty, a hundred &c, joyne, and come in to help freely. With friendly joyning they break up their fields. . . . The *Indian* Women to this day (notwithstanding our Howes, doe use their naturall H- ves of shells and Wood."

Most of the descriptions thus far given speak of the hills either as being "scattered over the surface with the greatest irregularity,"

[1] *Good Newes from New England*, 1624, p. 62.

[2] *The Red Man*, 1882, p. 175.

[3] *A Key into the Language of America*, 1643, pp. 37, 46, 89, 100, 101.

or more frequently as being placed four or five feet apart, implying regularly spaced parallel rows or ridges. In some parts of the country, however, the hills seem to have been placed much nearer together. Cyrus Thomas[1] quotes Sagard as describing the agriculture of the Hurons in 1623–26, saying that they dug a round place at every two feet or less, "every year in the same places and spots."

Summarizing, then, from these varied accounts from men who have seen the actual cultivation of Indian corn in New England by the aborigines, before they were touched by white influence, we have a definite picture of isolated hills, each built by itself, and cultivated in the same place, year after year. There was no suggestion of either plowing or breaking up an entire area in which they would plant as we do, but the fabrication of these separate hills, some two to four feet apart, usually in rows running one way.

There is some suggestiveness even in the method employed by the Indians in first clearing a piece of forest land, as described by Champlain, where they cut down the trees three feet from the ground, and then burned the branches upon the stumps, for such a method would leave available places for the separate hills only between the tree trunks on an average of some four or five feet apart. Such a first establishment of a new field, with the position of the hills conditioned by the stumps, would account for fields with the hills irregularly placed but about so far apart, and the fields with the hills in rows would be found either in naturally clear meadow land where there were never trees, or in a field long cleared, from which the stumps had been long rotted out. From the first coming of the whites, however, the Indians were very anxious to make use of the superior methods of the new comers, and in frequent deeds one can find mention of plowing up of so many acres of land as part compensation for a land purchase. Sometimes this plowing was offered by the whites as part of the inducement to get the Indians out of the vicinity, as at Northampton, to be explained later in connection with the removal of corn lands.

Concerning the agricultural implements employed, the shells

[1] "Handbook of American Indians," *Bulletin 30, Bureau of American Ethnology*, vol. I, p. 25.

of clams and the shells and bones of other creatures with convenient hard parts are specifically mentioned; such as deer scapulae, the carapace of the Turtle, or that of the horse-shoe crab, this latter naturally only close to the coast, where Champlain observed it. Hoes and spades of stone were also used.[1] William Wood, in New England's Prospect, 1634, gives preference to cultivation by clam shells over that by European tools, in spite of the fact that the plough will "teare up more ground in a day, than their Clamme shels could scrape up in a month."[2] But here again the superior tools of the whites appear often as compensation in land purchases, especially "howes." It is also very probable that in the majority of cases the original tools were mainly of wood, such as we now find among the more primitive aborigines still extant.[3]

The pictures drawn from the earlier observers concerning the guarding against the two chief annoyances, crows and wolves, are very human. Is it possible that the "great many little houses scattered over the field" which Champlain saw in Boston were connected with scaring of the crows, and used perhaps as watch houses for the "biggest children" to lodge in during the critical time for this purpose, and also possibly to "keep the Wolues from the fish till it be rotten"?

2. Aboriginal Corn-fields on Assonet Neck, near Taunton

There are no less than four different localities upon Assonet neck in the town of Berkley, where the ground is covered with rows of earth mounds, which traditionally are known locally as Indian corn-fields, and the appearance of which corresponds closely to all descriptions of such grounds.

These are (1) in woods, on the Phillips farm;
(2) in woods, on the Delabarre farm;
(3) in the Bennett pasture;
(4) in the Coombs pasture.

[1] Cyrus Thomas, *loc. cit.*

[2] Cited in a note by the editors of the above mentioned edition of Bradford, vol. 1, p. 219.

[3] For this see the recent article by Hough, "Corn cultivation among modern Hopi," *Proceedings of the United States National Museum*, vol. 54, pp. 235–296, especially the figures of Hopi agricultural implements of wood on pl. 19.

Although it strikes one at first, especially one who has had little or no experience with surface indications of ancient human activities, as unlikely that the traces of ancient tillage could persist for so many centuries, yet a study of the early accounts of the methods of cultivating Indian corn as practised by the aborigines renders quite possible the persistence of such culture.[1] What is significant in these accounts as foundation for a belief in the long continued preservation of the corn-hills, even down to the present time, is the following group of facts: the same hills were used year after year; they were highly fertilized; there were annual additions to the hills, making them of considerable size. After the abandonment of cultivation, the fertility and previous culture of the hills would for a long time support abundant vegetation, whose decay would contribute to their size, and whose roots and leaves would bind together the soil and preserve it from erosion. The spaces between the hills, hard trodden by the laborers and never worked or fertilized, would support only the more meagre vegetation of our New England wild pastures; would furnish the channels through which water would drain; and would form natural pathways which men and cattle passing through the fields would follow for the most part, thus treading them down, in preference to walking up and down over the hills. Under these conditions, it is not surprising that in many places the original hills should never yet have disappeared. This antecedent probability is confirmed by our observations. The photographs that we present (figure 11) give conclusive evidence that we have to do with genuine remains of Indian cultivation. They are easily distinguished from any natural formations, such as merely "hummocky ground," or hillocks of bunch-grass and similar growths. Moreover, they present a wholly different appearance from that of abandoned corn fields of the whites. If white men ever used them, it could have been only for a brief period after they first began cultivation in old Indian grounds, and before they made use of the plough.

[1] For clearly discernible remains of cattle paths and a certain type of artificial pond vastly more ancient than these American Indian records, see A. J. and G. Hubbard, *Neolithic Dew Ponds and Cattle-Ways*, Longmans, Green and Co., 3d edition, 1916.

These ancient corn-fields on Assonet neck are much more extensive than those of Northampton, where we have also observed them. This neck comprises about twelve hundred acres, lying in an angle at the confluence of the Taunton and Assonet rivers. It was one of the few places near Narragansett bay which remained

FIG. 11.—Indian corn-hills at Assonet neck, Mass. (1) In woods on Delabarre farm; (2) Coombes Pasture, looking south along rows; (3) Coombes Pasture, looking southwest; (4) Coombes Pasture, looking southwest along diagonals; (5) Coombes Pasture, looking southwest along diagonals: (6) Bennett Pasture, looking southwest along diagonals.

in possession of the Indians until the close of King Philip's war. Several former sites of Indian villages have been discovered on it, and it was undoubtedly once extensively cultivated. There seems to be some evidence that it was little inhabited after the great plague of 1616. The passage of three hundred years, however, has left its ancient corn-fields still clearly marked in woods, pastures, and other places left untilled by the whites. Some families long resident on the neck still call them Indian corn-hills. Four separate localities, as enumerated above, are known to the writers, and there are very likely others which they have not yet explored. The total area known to be occupied thus is about thirty acres, which must include over eighty thousand hills.

The cultivation here, in every one of the four localities, was in the highest degree regular and orderly. The hills lie in almost perfectly regular parallel rows, nearly evenly spaced in the rows, so that the lines are straight not only in one direction, but also in the direction at right angles to that, and likewise in the two diagonals. Two of the localities are in woods. In such situations they are least clearly marked because the decay of leaves and fallen branches is slowly obliterating them by filling in the spaces between them. One of our photographs shows them, though not so clearly as they can be seen on the spot, underneath a white pine tree that is six feet in circumference at the base. The other two localities are in open pastures, offering better opportunities for study. In both of these places the direction of the rows, corrected for magnetic variation, is N. 20° E. and E. 20° S., uniform in the eight different measurements taken. The two localities are separated by about half a mile, one being on the Taunton river side of the neck, the other near Assonet bay. One field in the woods is on the top of a narrow ridge that runs about north and south in the middle of the neck, at a place where it is nearly level, fifty to sixty feet above sea-level. The other three are on ground that runs from this ridge down towards the water on the one side or the other in alternate slopes and levels, and for the most part on the level portions.

The spacing of the hills is not the two feet of the Hurons, but very nearly the same as that found by Lapham in Wisconsin,

and by early observers in New England and Virginia. Seven lengths of about fifty feet each have been measured and the hills counted. In one of the two localities in pastures the hills were found to have an average distance apart of 3.75 feet, with a minimum of 3.25 and a maximum of 4.25; in the other, an average of 4.35 feet, with minimum of 4 and maximum of 5. The general average, then, is slightly over four feet, which is the distance of a long stride.

About a hundred of the hills, with the spaces between them, have been thoroughly dug over, in order to observe their structure and to see if Indian implements might be discovered. Many stones of all sizes were found within the hills. Evidently the Indians did not habitually throw these out, as one might naturally expect that they would have done. Very likely a moderate number of them was regarded as desirable, perhaps to keep the soil looser, perhaps even to facilitate digging. Many thin stones were found of such shape that they might well have been employed as hoes, but it was impossible to be sure whether they had actually served as such. Two well shaped oval hoes or spades of slate or similar material, one of them with notches at the sides, two broken arrowheads, and a small mortar such as might have been used for grinding mineral paint, were the only indubitable Indian artifacts discovered.

3. An Aboriginal Corn-field in Northampton

Attention has recently been directed to a rough field or pasture in Northampton, Mass., the surface of which is covered by small mounds set in definite rows, and evidently, both by the position of the field relative to traditional Indian sites, as well as by the intrinsic evidence of the field itself, a part of aboriginal corn-planting ground. The accompanying map, a part of one published in Trumbull's History of Northampton,[1] and reproduced from one issued by the Town in January, 1831, serves to show the main centers of activity, both of the Indians and of the English settlers (fig. 12).

Naturally the underlying features which have conditioned all settlement activities of both races are the courses of the two rivers

[1] Gazette Printing Co., Northampton, 1898, vol. I, folder between pp. 16–17.

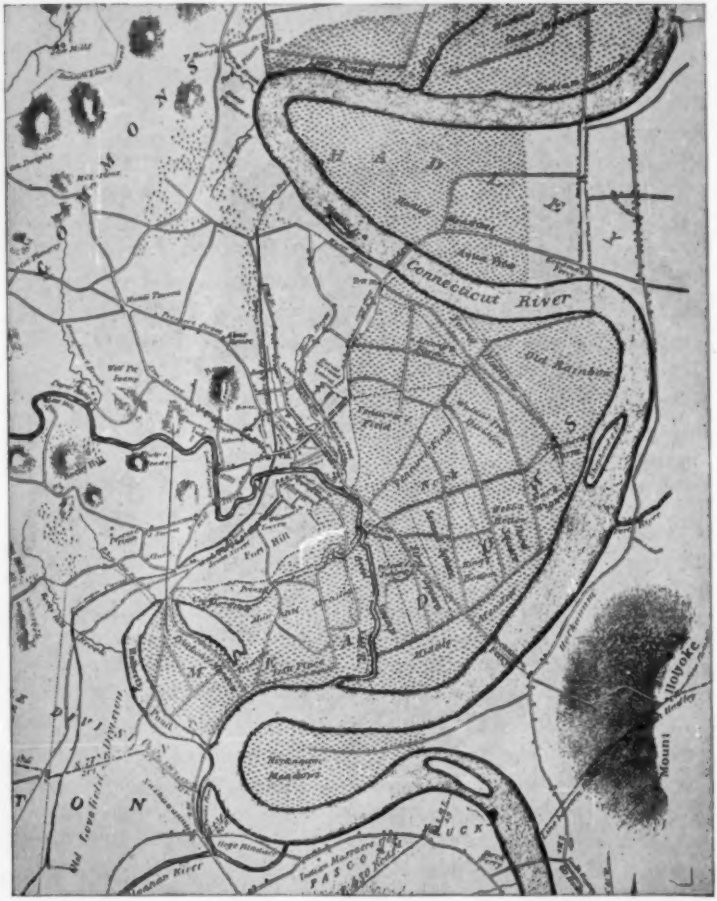

FIG. 12.—Map of Northampton, Mass. Drawn in 1831.

of the vicinity, the Connecticut, which in early times was characterized by a great bend, or "ox-bow," incorporated in the main stream, and the smaller and still more sinuous stream, the Mill river. Throughout the area of this map, and further, the Connecticut is a

very tortuous stream, abounding in extensive bends and loops. Of those shown here the most northern, extended towards the west and forming a long and narrow loop, is occupied by the settlement of Hadley, founded in 1659, which consists essentially of two streets, running north and south, connecting the two ends of the loop. Further down, near the southern limit of the map, as given here, is a second large loop or "ox-bow", more typical in its shape than the one at Hadley, and still at this time forming an integral part of the Connecticut river, its enclosed meadow, "Hockanum," being directly connected with the land upon the east side. Ten years after the drawing of this map, in the early spring of 1840, this ox-bow was cut off by the familiar action of rivers in such cases, and the new course connected the two banks at the mouth of the loop, leaving the ox-bow as a quiet lagoon, known locally as the "old-bed," and a famous fishing ground. A more careful scrutiny of the map at this point will show that in prehistoric times a similar ox-bow was cut off, situated farther to the west, and that its remnant, also in the form of a still more shrunken lagoon, cut into two pieces, was plainly seen in 1831.

If attention is now directed to the smaller stream, "Mill river," its earlier course, and the one used at the coming of the whites, as indicated here by the double dotted lines, caused it to form an extensive loop, almost surrounding "Fort Hill," and finally emptying into the prehistoric ox-bow. This stream, more than the larger Connecticut, caused the early English settlers much annoyance by frequently flooding its banks, so that, not only in the spring, but almost continually in some seasons, the meadows between this loop and the Connecticut were under water. This soon caused the settlers to dig a new course directly to the Connecticut (1720), cutting off one whole side of the loop, and effecting a juncture directly to the side of the ox-bow as in this map. Since the severance of the ox-bow, ten years later, the lower course of Mill river was again changed, and it now empties into the main Connecticut.

The traditional site of the Indian town, where the purchase was probably made for the present town of Northampton by John Pynchon, was the sightly piece of raised ground lying in the

little loop of Mill river, and it was evident from the outset that so close a proximity to the place where the English designed to build would be in many ways unpleasant. It was therefore definitely stipulated, and so stated in the original deed of purchase, that the Indians were to remove their settlement here, in the loop of Mill river, and locate upon the east side of the Connecticut the following year (1654), the English to plow up for them sixteen acres of meadow land there for the planting of their corn. The Indians were allowed to keep their present corn-fields for the year following, 1654, but after that time they were to remove wholly to the east of the Connecticut, and leave the English finally free from them. The original text, which seems to have been rather unusual in its definiteness, runs in part as follows:

. . . The Aforesaid Indians and in pticular Wawhollowa, Nenessahalant, and Nassachohe beeing the Sachems of Nanotuck doe for themselues and with the Consent of the other Indians and owners of the sd Groundes, sell, giue, and Grant vnto John Pynchon of Springfeild and to his Assignes for and in the Consideration of one hundred fathum of Wampam by Tale and for Tenn Coates (besides some small gifts) in hand to the said Sachems and owners, All the land Aforesaid as [by] these presents haue bargained, granted and sould to the [said] Pynchon all and singuler the said landes free from all Cumbrances of Indians provided the said Pynchon shall plow vpp or cawse to bee plowed vpp for the said Indians Sixteene Acres of land on the Easterly side of Quoneticutt River which is to bee donn sometime next summer 1654 And in the meane time viz the next spring 1654, the Indians haue liberty to plant ther present Corne feildes, but after that time they are wholly to leaue that West side of the river. And not to plant or molest y^e^ English ther.

All the said Premises the said Pynchon and his assignes shall haue and enjoy Absolutely and Clearly forever [from] all in Cumbrances from any Indians or their corne feilds.

Thus it is clear that the Indian corn-fields included within this loop of the smaller river were harvested by them for the last time in the fall of 1654, while during the next few years the Indian people themselves were much in evidence, living for the most part in friendly relations with the whites, paying an occasional fine for drunkenness, or breaking into a mill and stealing "divers tool and meal." In ten years, however, probably fearing the Mohawks, who had then become occasional visitors to this valley, the local

Indians applied to the English town for "a gift of land on which to build a fort" [Trumbull, *History of Northampton*, vol. I, p. 176.] This was granted under certain rather stringent conditions, but there is no definite record as to the location of this later fort. Although some of the local historians seem to mix this up with the fort in the loop of the river of previous occupancy, there is good evidence that such was not the case, as this latter territory had already been apportioned to several English settlers. The most likely site for this later settlement was at the bend of the river west of Hadley, on the way to Hatfield, marked on the extreme north of the accompanying map as "Fort Plain." In any case this interval of Indian occupancy was of short duration, for at the outbreak of Philip's war in 1675 the Indians withdrew from the entire region, never to return.

This, then, is the history of a definite Indian village, the one almost coincident with the first center of Northampton. Traditionally it consisted of a "fort" or palisade, which is said to have been on the bluff at the north-east end of the elevation, on grounds now owned by Mr. Frank Lyman. This location is a very sightly place, looking off towards the east with a long stretch of meadows, and Mts. Holyoke and Tom in full view. Almost at one's foot the original channel of the Mill river is distinctly visible, cutting off the village site from the plains below, and emptying finally into the side of the oldest ox-bow. Since, in this region at least, there are always to be expected in each Indian settlement three associated sites, the village, the corn planting grounds, and the burying ground, one is tempted *a priori* to make a guess as to the most probable location for the two last. Burying grounds hereabouts seem to show no fixed relationship to the village site, and their discovery is a matter of chance, bones being found by plowing or other excavation; but if any bones have ever been unearthed here their tradition has long been lost. That such has been the case is very probable, as South St., one of the most populous residence streets, runs lengthwise through the entire elevation, and, as this is also one of the oldest streets, any such bones would have been found early, when Indian bones were sufficiently frequent to have caused no special mention.

As for the corn-fields, however, their location could have been only in one general region, along the north and west side of the elevation. The land drops precipitously almost alongside the street, and the lower level extends a long distance as a rather narrow meadow, enclosed within the loop, and of very easy access to the high land. On the east and south of the high land, on the other hand, the meadows were cut off from the settlement by the loop of the river, and in addition to this the meadows were frequently flooded, previous to 1720 when the river was put into a new channel.

It is precisely upon this northern and western meadow, practically within this river loop, that there are situated the remains of the Indian corn-field which is the subject of this portion of the paper. It lies in a somewhat sunken meadow, shut off on one side by a railroad embankment and on the other by the bluff leading up to the high land of South street. About a hundred years ago a canal was constructed between Northampton and New Haven, which ran immediately at the foot of the bluff, as still shown on the map of 1831, and naturally this part of the field is free from all traces of cultivation. But between the old canal bed and the railroad embankment, which here runs parallel to it, extend some three thousand elevated mounds in nearly perfect rows, presenting the general appearance of the accompanying photographs.

One first gains access to this field (fig. 13, 1), which is low and sunken, by crossing over the railway, and coming down to it upon a long narrow mound, clearly visible in the foreground, and giving at first much the appearance of an intentionally constructed driveway. A moment's study of the land back of this, and upon the other side of the railway, shows it to be nothing but the end of a natural slope, the result of glacial action and due wholly to natural causes. When the observer has stepped wholly off this mound and stands upon the lower level (fig. 13, 2 and 3) he stands among the corn-hills and sees them in very good parallel rows, in a general NE.–SW. direction. The houses upon the bluff in front are placed along the road, South St., which traverses the bluff lengthwise, and are here situated where the bluff is very narrow, scarcely wider than the

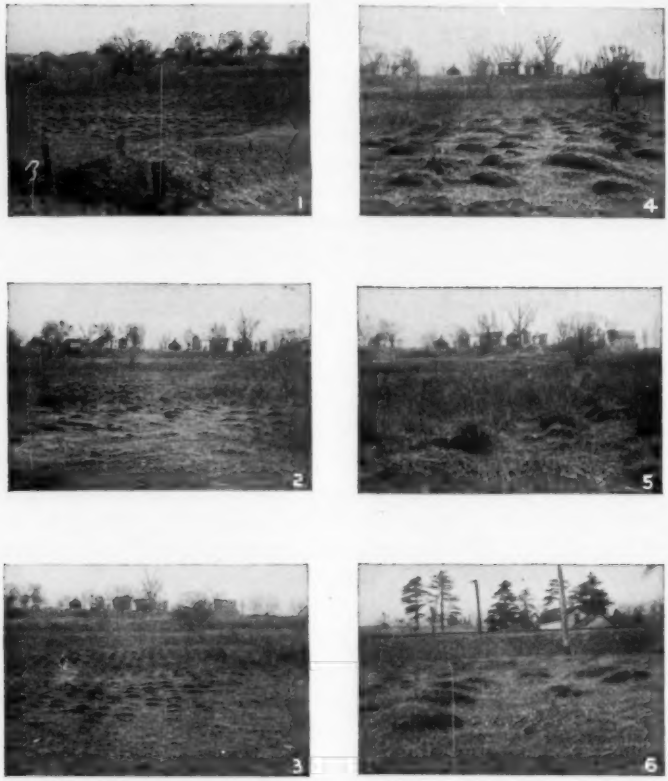

FIG. 13.—(1) Indian corn-hills in meadow between Earle and South Streets, Northampton, Mass. Approach from railroad embankment, looking southeast; (2) Indian corn-hills in Northampton. Observer standing just to the east of the large mound shown in (1); (3) Indian corn-hills in Northampton. Observer a few steps further east than in (2), in alignment with the rows of corn-hills shown in (3); (4) Hills in the middle of the field; in the immediate foreground some of the elongated mounds; (5) a detail of the Northampton corn-field showing growth of hardhack (Spirea); (6) A view of nearly leveled hills lying near the railroad embankment; the observer is looking northwest, just the opposite direction from that from which the five others were taken.

street and the two rows of houses. The more expanded portion of the higher land is to the observer's left (east), and runs from here nearly half a mile before the end of the bluff is reached, and the presumable site of the palisade.

The arrangement of the separate hills does not quite correspond to the double alignment of the fields of Assonet, nor is at all like the perfectly irregular order described by Lapham, which may perhaps have for its cause the method of planting on partially cleared forest areas. It is an alignment in one direction only, fairly straight rows running from northwest to southeast, but with the distance between the individual hills of each row so irregular that for the most part the hills do not line up when viewed across the longitudinal rows, either at right angles or diagonally. In a few spots there is such a chance alignment, but it does not continue more than a few hills, and is plainly a chance arrangement.

The rows were evidently run by eye, without the use of a line, as they do not keep quite straight, but get to curving quite perceptibly, all in one direction, when looking down the entire field. The average distance from row to row is a little more than 3 feet; we had a meter stick to measure them with and the meter stick would about span them from the center of one hill to that of the nearest one in the adjacent row. The distance from one hill to the next in the same row was approximately the same, although the fact that definite cross-rows could not be perceived was a clear proof that there was no constancy in this direction. Down in the south corner of the field, where it was the most overgrown by the spirea bushes, the distances were rather greater than elsewhere, that between rows being fully four feet. In one or two places, where a curving of one or two rows had left a chance space between the rows, a single hill, or perhaps two hills, were squeezed in out of alignment, evidently with the utilitarian purpose only of getting in all the corn-hills possible within that area. At the present time the entire meadow is rather wet for successful corn planting, but the very next field to it on the east was planted to corn only last year, and the crop was apparently a good one. This field was lower, and has in the middle some standing water at present, but even

here the spirea tops, sticking up through the water, are as definitely in rows as elsewhere. Furthermore, several changes within historic times must have effected some changes of level over the entire region, such as, for instance, the building of a dam in Mill river a little below this about 150 years ago, and probably also the formation of the solid railroad embankment in 1840. There is decided indication of spring inundations over that part where the corn-hills are not now very apparent, and we may readily assume that such profound surface changes as have taken place over this region, dams, embankments, and so on, have brought about changes in the conditions over the surface, and in the action of the water.

While in general the separate hills are fairly uniform in size and shape, conical mounds of perhaps two feet in diameter, and 8 to 12 inches in height, there are certain regions where the mounds are irregular in shape, and prolonged laterally, generally obliquely, to give the appearance of the conventional gravemound (fig. 13, 4). In one place, and involving some two rows, these oblong mounds come in succession and involve twenty to thirty hills in all. In one portion of the field the ground is covered with hardhack, *Spirea tomentosa*, which, as is its habit, picks out the elevations and leaves the lower levels bare (fig. 13, 5). Here, even in November, when the bushes are represented by bare and dry stalks the alignment is well seen by following the tips of the dry bushes, and thus where otherwise the area would be a hopeless tangle, the definite alignment of the corn-hills is as clearly marked as elsewhere.

In some places, whether the mounds are quite free from the spirea, which must have somewhat of a protective effect upon them, or from some other reason, such as inundations, the mounds are being gradually worn down, and in some directions or in some lightings are but dimly seen (fig. 13, 6). The particular ones shown in this figure lie near the railroad embankment and they may have suffered from some of the circumstances incident to this work. Finally, over the easternmost half of this field the corn-hills have all but disappeared, although there are sufficient traces here and there to assure one that this tract, as well as the part where the preservation is more perfect, was once included in the original corn-planting lands.

If, now, by the help of this corn-field, and what there is left by tradition, and by our knowledge of former courses of the rivers and the water level in general in this region, we should attempt to reconstruct in our mind's eye the appearance of this little region just previous to the advent of Master John Pynchon, Real Estate Dealer from Springfield, we get a most pleasing picture of an ideal aboriginal settlement, exceptionally well protected by nature from hostile forces and furnished with just the advantages desired. A bluff, sufficiently high to overlook the surrounding country on all sides, tapers off behind into a narrow neck, easily guarded, and is enclosed by an almost complete loop of a fairly swift stream, large enough to furnish a decided barrier to a band of hostile men. Aside from the highland the loop also included an ample stretch of good corn land on a clear meadow, protected by its position from the frequent floods from both rivers, which in front and on the lower (southern) side continually convert the meadows lying without the loop into an unbroken sheet of water. When one sees this palisaded village, standing up out of this vast expanse of flooded meadows, one thinks forcibly of Judd's derivation of the word Nonotuck (with its dialectic forms Norwattock, Nolwottogg, etc.), as "in the midst of the waters," from Natick *noeu* or *noau* (in the midst of), and *tuck*, a stream or river.[1] Unfortunately, however, as in so many other cases, a romantic significance given for an Indian word cannot stand the common-sense explanation of a man familiar with the spoken tongue of the Algonkians, in such nearby tribes as the Penobscot or Passamaquoddy; and in spite of the emotional appeal of this "Village-in-the-midst-of-the-river," candor compels us to state that our friend Dr. Frank G. Speck, who is not only a philogogist of much note, but who also lives on the best terms with the tribes just mentioned, and speaks their language with perfect readiness, says that *nonotuck*, in all its different dialectic forms, is simply to this day the common term for "up-river," a term applied to any thing, island, tribe, or whatever it may be, in the direction

[1] Sylvester Judd, *History of Hadley*, p. 114. Trumbull's Natick Dictionary gives the word *noeu*, with the meaning of "in the middle, the midst," and Eliot uses it in this sense in his Bible, Joshua, chap. XIII, verses 9, 16.

designated. This was hardly the name by which the people of this village designated themselves, but as Springfield, down-river from Nonotuck, was the first locality about here known to the whites, who opened a trading-store in 1636, having reached the Connecticut at this place across country, through Quinsigamond (Worcester) and Quabaog (Brookfield), they would first hear of these up-river tribes from the local Indians that came about Master William Pynchon's store, who would naturally speak of them as *nonotuck*, the people up-river. When, twenty years afterwards, John Pynchon, son of William, bought the land of these up-river Indians, a part of his stipulation included the promise on the part of these same Nonotucks to remove across the big river, and leave the land in entire possession of the English.

4. Conclusion

There can be no doubt, then, that these "Indian corn-hills," still extant and plainly visible not only in these places that we have described but probably also in many others, are exactly what local tradition in some cases holds them to be—genuine relics of Indian cultivation of the land. Their general appearance proves it, conformable as it is to that which the hills in actual cultivation by the Indians must have presented, and differing wholly from that of fields in which any kind of white men's crops have been grown. The known identity in locality of the present remains in Northampton with the site of the ancient Indian corn lands is another convincing proof. It is easily understood how conditions have insured their survival, in many cases with probably little change in appearance from that which they presented when they were first abandoned, two and a half to three centuries ago.

It is likely that, if the fields in which they lie continue as waste land or used for no other than pasturage purposes, they will still be easily observable for at least as many centuries to come. We have found them varying considerably in size and shape and distance apart; and the authorities whom we have quoted describe still further variations. In size and shape, they are usually low roundish individual mounds, less than two feet in diameter, rising above the

intervals between them from eight to twelve inches in the best preserved examples, and thence down now to a mere trace in cases where destructive influences have affected them. Sometimes, however, a number of them are joined together into a continuous mound; and apparently Lapham observed a type where entire rows formed continuous ridges without individual hills, though his description is not definite enough to make this sure.

As to their distance apart, there was evidently much difference in practice among Indians of different localities, though perhaps a considerable uniformity in any one locality, unless conditions varied, as for instance in the use of land newly cleared of trees as against that which had always or long been clear. At one extreme are the hills that Lapham describes as scattered over the surface with the greatest irregularity. The closest regular spacing seems to have been that of the Hurons, two feet or less. A third method of spacing was that of Lapham's parallel ridges about four feet apart, apparently without individual hills. Most of the other quoted authorities give the interspaces as three to five feet, without mention of whether they were irregularly placed or formed definite rows, and in the rows continuous ridges or separated hills, yet almost certainly the latter except in newly cleared land. Where definite rows of individual hills were formed, they were sometimes aligned in one direction only and no attention was paid as to whether or not they formed straight lines with one another in the direction at right angles to that; but sometimes great care was used to arrange them straight and true in both main directions and thus also in both diagonals. At Northampton there are regularly parallel, though not necessarily entirely straight rows a little over three feet apart, singly aligned because within the rows the spacing of the hills was irregular. Finally, most definite and orderly of all, on Assonet neck the rows run everywhere perfectly straight (unless rocks or other obstacles interfere), doubly aligned, with an almost constant distance between hills of a little more than four feet in both directions.

SOME CONCLUSIONS AND SUGGESTIONS REGARDING THE POLYNESIAN PROBLEM

By EDWARD S. HANDY

IN view of the organized attack on Polynesian problems, anthropological and otherwise, which is on the eve of being launched at this time, it is perhaps the duty of those who feel that they have conclusions and theories which may possibly be useful or stimulating to others who are working or thinking in the same field, to put before their co-workers these suggestions, even though the conclusions are necessarily of a tentative nature. The conclusions stated below are based on literary research into certain phases of Polynesian culture in which the writer has been engaged for several years. While it is felt that the information derived from these sources is sufficient to warrant the drawing of such conclusions, it is hoped that these will be clearly understood to be tentative suggestions based on the limited data now available. The information now at hand will probably dwindle into insignificance before the more plentiful and accurate data which it is hoped that the next few years' work in the area will place before the scientific world.

Unfortunately lack of time and space makes impossible the presentation of the evidence which it is believed supports the conclusions which follow. These conclusions are the outgrowth of a somewhat exhaustive study of the literary sources of information with regard to the area, in the course of which was accumulated a considerable amount of material which cannot even be referred to in an article of this kind. In most cases also it has been impossible to go into explanations of the lines of reasoning which have led to the conclusions. A few references chosen from a considerable number may aid those who are interested in judging for themselves as to whether the conclusions are justified.

I

The places of burial of sacred chiefs were places of public worship in Hawaii, the Society islands, the Marquesas, Tonga, and New Zealand. Information regarding this is lacking in the Cook group. In Easter island worship seems to have been conducted before the great image platforms which were used for burial. From Samoa evidence which would indicate that chiefs' tombs were places of public worship is lacking.[1]

In historic times it appears that places of public worship, or temples, were frequently, though not always, used for burial purposes.

It is believed that the prototype of the stone tomb and temple forms of Hawaii, the Society group, the Marquesas, and Easter island was a tomb form. The rudimentary type of this tomb-temple is probably to be found in the tombs of the kings in Tonga, consisting of superimposed earth platforms faced with stone blocks.[2] These platforms may have originated in the simple earth mound used here for burial in historic times, or this earth mound may have represented a degeneration from a stone tomb.

The following temple and tomb forms, derived from this Tongan prototype, were found in those island groups which utilized stone construction, and concerning which we have adequate information.

[1] See for Hawaii: W. Ellis, *Polynesian Researches*, vol. IV, pp. 164–6, London, 1853. James Cook, *The Three Voyages of Captain James Cook Round the World*, pp. 882–3. London, 1842.

Society Group: Cook, *op. cit.*, p. 771.

Sir Joseph Banks, *Journal of the Right Honorable*, etc., p. 175. London, 1896. J. A. Moorenhout, *Voyages aux Iles du Grand Ocean*, vol. I, p. 470. Paris, 1837.

Marquesas: A. Baessler, "Reise in östlichen Polynesien," *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, 1896, p. 464.

Tonga: W. Mariner, *An Account of the Natives of The Tonga Islands in the Pacific Ocean*, compiled by John Martin, pp. 385–387.

New Zealand: R. Taylor, *Te Ika a Maui; or, New Zealand and its Inhabitants*, pp. 98–9, 174, 183, 208. London and New Zealand, 1870.

Easter Island: Paymaster W. T. Thompson, "Te Pito Henua, or Easter Island," in *Report of the U. S. National Museum for the year ending June 30, 1889* (published 1891), pp. 470–1, 499.

[2] *A Missionary Voyage to the South Pacific Ocean . . . in the Ship Duff*, etc., pp. 278–9. London, 1799.

In the Society group there were early platform, and later pyramidal types of maraes; the pyramid growing out of the superposition of a number of platforms. In Hawaii were found early platform and pyramidal types, and later walled heiaus with inner compartments. In the Marquesas there developed the platform ma'ae, sometimes consisting of several terraces running up a hillside. And in Easter island there were the stone platforms on which the great images stood, the platforms being stepped on the landward side.[1]

The variation in form of the tomb-temple in the several groups may be explained for the most part by local environment and political development. Thus, the influence of environment is to be seen best in the Marquesas where the necessity of accomodating the temples to the abrupt slopes of the valleys produced the terrace forms. The effect of political development may be seen in Hawaii, where the organization of state and cult had attained its greatest development. This led to the exclusion of commoners from temple ceremonial and to the development of the great walled heiaus.

The use of large stone construction in tombs and temples seems scarcely to have touched the Cook group, and not to have influenced New Zealand at all. Thus, large stone construction was found to have been confined to the northern and central part of the area.

Certain important features connected with tomb-temples occurred pretty generally over the whole area, including New Zealand. The first of these was the association of the places of worship and places of burial which was discussed above.[2] Other features of importance were the following.

[1] Society Group: Paul Huguenin, "Raiatea la Sacrée," *Bulletin de la Société Neuchateloise de Géographie*, Tome XIV, p. 164. Neuchatel, 1902. *Duff's Voyage*, p. 304.

D. Tyerman, and G. Bennett, *Journal of the Voyages and Travels*, etc., compiled by James Montgomery, pp. 176, 194–5. Boston and New York, 1832.

Hawaii: Cook, *op. cit.*, p. 968.

A. Fornander, *An Account of the Polynesian Race*, vol. II, p. 6. London, 1878–1885.

Ellis, *op. cit.*, vol. IV, pp. 97–8, 116.

Marquesas: Dr. Tautain, "Notes sur les Constructions et les Monuments des Marquises," *l'Anthropologie*, VIII, pp. 667–71.

Easter Island: Thompson, *op. cit.*, pp. 499, 502.

[2] This was, of course a natural concomitant of the ancestral cult which constituted a fundamental element in the worship everywhere.

In all the groups there was found to be a sacred area, which was in front of, or around, the sacred place. The sacred place usually consisted of a mound, platform, or pyramid. A sacred enclosure was formed by surrounding this area with a fence or stone wall in all the groups concerning which we have information, *viz.*, Hawaii, the Society group, the Marquesas (apparently only sometimes here), Easter island, Tonga, and New Zealand.[1]

Within and without the sacred enclosure were sometimes one, sometimes a number of sacred houses used for different purposes: protecting the tomb, sacred relics, images or other representations of deity, paraphernalia; for housing priests; and so on.

Sacred groves were associated with places of burial and worship in Tonga, Samoa, the Society and Cook groups, the Marquesas, and New Zealand.[2] The fact that these sacred groves were not found in Hawaii may be due to environment. This would certainly be capable of explaining the lack of them in Easter island.

At the back of the sacred place in Hawaii, the Society group, the Marquesas, and the Cook group was a sacrifice pit into which remains of offerings were thrown.[3] A ditch at the back of the

[1] Hawaii: D. Malo, *Hawaiian Antiquities*, pp. 211–14. Honolulu, 1903.
Society Group: *Duff's Voyage*, p. 304.
Marquesas: Pedro Fernandez de Quiros, "The Voyages of . . . 1595 to 1606," *The Hakluyt Society*, Series II, vol. XIV, p. 60. London, 1804.
H. Melville, *Typee*, p. 59. London, 1904.
Easter Island: Don Felipe Gonzalez, "The Cruise of . . . to Easter Island," 1770–1771. *The Hakluyt Society*, Series II, No. XIII, p. 136. Cambridge, England, 1808.
Tonga: *Duff's Voyage*, pp. 278–9.
New Zealand: S. Percy Smith, "The Lore of the Whare-wananga," etc., *Memoirs of the Polynesian Society*, vol. III, p. 89. New Plymouth, N. Z., 1913.
See also Taylor, *loc. cit.*

[2] Tonga: Cook, *op. cit.*, p. 419.
Samoa: G. Turner, *Nineteen Years in Polynesia*, p. 240. London, 1861.
Society Group: Ellis, *op. cit.*, vol. I, pp. 341–2.
Cook Group: W. W. Gill, *Historical Sketches of Savage Life in Polynesia*, p. 195. Wellington, 1880.
Marquesas: Melville, *op. cit.*, p. 147.
New Zealand: Taylor, *op. cit.*, pp. 98–9.

[3] Hawaii: Malo, *op. cit.*, pp. 211–14.
Society Group: M. de Bovis, "État de la Société Tahitienne a l'Arrivée des Europeans," *Revue Coloniale*, 1855, pp. 44–7.

tomb of a Tongan chief, which is described by Cook, probably corresponds to this sacrifice pit elsewhere.[1] There is interesting indirect evidence which suggests that the sacred latrine in New Zealand[2] may also correspond to these pits.

There was definite orientation in the Cook group[3] and New Zealand,[4] temples or sacred buildings facing the east. In Hawaii temple enclosures seem to have been orientated to different cardinal points in those instances in which we have information regarding this.[5]

There was too much variation with regard to houses, altars, images, drums, ovens, certain boards erected in memory of chiefs, and some other features associated with places of worship, to allow of a discussion of these here. The oracle tower in Hawaii appears to have had no correspondence elsewhere in the area.[6] The mere mention of these as features which were associated with places of worship in various parts of Polynesia may, however, be suggestive.

II

Stone slab seats associated with sacred places, sacred chiefhood, and the ancestral cult,[7] were found in New Zealand, on Rarotonga

Marquesas: Tautain, *op. cit.*, p. 688.

Cook Group: W. W. Gill, *Myths and Songs, from the South Seas*, p. 295. London, 1876.

[1] Cook, *op. cit.*, p. 716.

[2] Smith, *op. cit.*, p. 88, note.

[3] Gill, *Historical Sketches*, etc., p. 32.

[4] White, John, *The Ancient History of the Maori*, vol. I, p. 5. Wellington, 18— to 1890.

[5] Malo, *op. cit.*, p. 214.

A. Kraemer, *Hawaii, Ostmikronesien, und Samoa*, p. 106. Stuttgart, 1906.

C. Wilkes, *Narrative of the U. S. Exploring Expedition*, vol. IV, p. 100. Philadelphia, 1485.

Ellis, *op. cit.*, vol. IV, pp. 97, 116.

[6] Malo, *op. cit.*, pp. 211, 222.

[7] It will be of importance to determine whether these stone slabs used as seats were identified with the slabs which lined the graves of chiefs in Tonga and Samoa. Dr. Tozzer has made the interesting suggestion that the platform which it has been supposed was the prototype of the temple forms may itself have been in origin an elaborated seat of sacred chiefs. There is evidence to support this suggestion. This is a very important point: the proof of the identity of origin of the slab seats and the platform would, as is easily to be seen, necessitate a total abandonment of most of the conclusions stated in the second part of this paper.

(Cook group), Niue, Samoa, the Society group, and the Marquesas.[1] We know of no evidence of the use of such seats in Tonga or Hawaii. This usage was, therefore, of importance in the southern groups where stone construction was not found, *viz.*, New Zealand and the Cook group. Furthermore, stone seats were not found in association with chiefs or sacred places in Tonga or Hawaii where large stone construction was of great importance. Hence it was concluded that this use of stone slab seats belonged to one cultural stratum, while the utilization of large stone in temple construction belonged to another.

In connection with this there is some interesting and very suggestive evidence with regard to Hawaii. The Pohaku o Kane, or stones of Kane, were here upright stones of varying sizes which were venerated by the lower classes.[2] It seems possible that the Pohaku o Kane originally corresponded to the stone seats under discussion. If this proves to be so, will it not indicate the submergence in Hawaii of that cultural stratum of which the veneration of such slabs as seats of sacred chiefs was typical? A number of other bits of evidence lend support to this theory. It is impossible, however, to enter into a discussion of these here, because they have grown out of the study of certain phases of the religion of Polynesia as a whole, which would have to be described with more thoroughness than space allows at this time. But it may be said in passing that careful study of certain matters in Hawaii would be expected to throw much light on this question. Some of these features in Hawaiian culture are the use of face tattooing by the Kauwa, or lowest class, exclusively; the fact that these Kauwa were also called

[1] New Zealand: S. Percy Smith, *Memoirs of the Polynesian Society*, vol. III, pp. 88–9.
Cook Group: S. Percy Smith, "Arai-te-Tonga, the ancient Marae of Rarotonga," *Journal of the Polynesian Society*, vol. XI, p. 174; vol. XII, pp. 218–20.
Niue: S. Percy Smith, "Niue Island and its People," Part II, *Journal of the Polynesian Society*, vol. XI, p. 174.
Samoa: G. Turner, *Somoa, a Hundred Years Ago and Long Before*, p. 23. London, 1884.
Society Group: A. Baessler, *Neue Südsee Bilder*, pp. 119–20. Berlin, 1900.
Marquesas: LeP. Mathias Garcia, *Letters sur les Iles Marquises*, p. 72. Paris, 1843.

[2] W. D. Alexander, *A Brief History of the Hawaiian People*, pp. 37. 44. New York, 1892.

Aumakua, the term used for ancestral deities of the private cult; the apparent use of flexed burial by the lower classes only; the use of the kuahu shrine and employment of shamanistic workers exclusively, and the use of the oven largely, in private ceremonial; evidences of former cannibalism; and so on.

To sum up, therefore, the hypothesis is presented that the cultural stratum, of which the use of stone slab seats was characteristic and which was represented by the chiefs in New Zealand and elsewhere in the southern and central part of the area, was submerged in Hawaii, being represented there by commoners; and that another cultural stratum, of which the use of large stone construction was characteristic, was spread over the central region and Hawaii but influenced the Cook group and New Zealand only to a very slight extent.

III

An analysis of the elements constituting the religion of Polynesia and a study of these with regard to their distribution led to the following grouping of these in association with the use of stone slab seats and large stone construction. Unfortunately time and space do not allow me to give my reasons for this classification, to present my evidence, or even to give adequate references. How much of this classification will stand, how much of it will be found erroneous in the light of future information, is unknown. It is offered at this time, however, in the hope that it may be suggestive and perhaps stimulating to others interested in the Polynesian problem, and in the problems of the other related areas to the westward where lie the routes by which the Polynesians must have migrated.

Simply for the sake of having some designation for the peoples to whom belonged these several cultural strata, those who brought the use of stone slab seats have been called Slab Users, and those who utilized stone construction, the Stone Builders. The Slab User elements are to be found most clearly defined in New Zealand, while the Stone Builder elements are dominant in Hawaii. In the central region they are combined in various ways.

It may be pointed out that certain important elements stand

out in very distinct contrast as characteristic of the religions of the northern and southern extremes of the Polynesian area. Around these as nuclei were grouped other elements which seemed to be associated. Thus we find:

In Hawaii: stone construction, seasonal ceremonial in which a sacred king takes a priestly part, the ceremonial taboo, in general a thoroughly organized and ordered worship. These are totally lacking in New Zealand.

In New Zealand: stone slab seats, sacred groves, the veneration of skulls, shamans, the use of coercive spells in connection with public enterprise, planting and harvest a ritual performance, the Hawaiki belief. These are totally lacking or entirely secondary in Hawaii.

Elements typical of the Slab Users are the following:

(1) The veneration of slabs associated with ancestors and sacred chiefs, these slabs being generally used as seats by chiefs.
(2) Sacred groves.
(3) Sacred chiefs functioning in the public ancestral cult.
(4) Ancestral deities, both public and private. The veneration of skulls and other ancestral relics.
(5) Methods of disposal of the dead: exposure, flexed inhumation in a sitting posture, use of canoe coffins, secondary disposal of skeletal remains in caves. The placing of offerings of food and weapons with dead bodies.
(6) Funerary feasts.
(7) Survival of head hunting in the preservation of enemy skulls and heads.
(8) The belief in incarnation of ancestral spirits in animate and inanimate objects.
(9) Omens from animal movements.
(10) Divination by gazing into liquids, by possession, and in trance.
(11) Shamans: inspirational diviners, necromancers, magic workers. A great use of witchcraft in public and private application, employing coercive spells.
(12) The use of genealogies as religious formulae.
(13) The belief in the similarity of spirits of natural objects to man's spirit.

(14) A more primitive form and use of the dance: war dances, paddle dances, spear dances, dances by widows of warriors.
(15) The work of planting and harvest a ritual performance.
(16) Those types of taboo which are particularly associated with the ancestral cult.
(17) Rahui, prohibition or restriction by means of badges or signs.
(18) The use of water in purification ceremonies.
(19) The use of the oven in public and private rites.
(20) The belief in Hawaiki, an origin-land to which the spirits of men returned.
(21) Stratified heavens of myth.
(22) Tattooing.
(23) Cannibalism.

Elements typical of the Stone Builders:

(*a*) The use of large stone in the construction of tombs and temples. (See No. 1 above.)
(*b*) Embalming.(?) The use of tombs. (See No. 5 above.)
(*c*) Violent mourning, dissipation after a sacred king's or chief's death, hired weepers, the singing of eulogies. (See No. 6 above.)
(*d*) Special rites for deifying great men.
(*e*) General or ceremonial taboo. (See No. 16 and No. 17 above.)
(*f*) The worship of the great gods of myth in the public cult. (See No. 4 above.)
(*g*) Divining by breaking objects and observing the scattering of fragments. (See No. 9 above.)
(*h*) Haruspication. (See No. 10 above.)
(*i*) An organized priesthood, the temple priests or directors of ceremonial being allied to the chiefs or kings. Inspirational diviners, necromancers, and magic workers relegated to a secondary position. (See No. 11 above.)
(*j*) Craftsmanship: the development of trades in the hands of master-craftsmen who were priests of the rituals of their trades.
(*k*) True prayers, supplications, associated with the offering of sacrifices. Human sacrifice. (See No. 11 and 12 above.)

(*l*) The belief in man's possessing a soul peculiar to himself, and in nature's being animated by nature spirits differing from men's souls. (See No. 13 above.)

(*m*) A generation or fertilization cult expressed in seasonal ceremonial; dancing in which sexual abandon played a part; the functioning of sacred chiefs or kings in a priestly capacity in first fruits rites, and a belief in the intimate connection between the sacred chief or king and the growth of things and prosperity. (See No. 15 above.)

(*n*) Organized dancing and singing as part of public ceremonial. (See No. 14 above.)

(*o*) The belief in a lower hades for the unfortunate, and an upper paradise for the fortunate. (See No. 20 above.)

(*p*) In general this stratum was represented by a better organized and higher type of worship.

It may be remarked in connection with recent discussion of the occurrence of sun worship in Polynesia[1] that no evidence was found which would, in the opinion of the writer, warrant the assumption that a sun cult was ever a basic element in Polynesian worship.

We must leave untouched for the present the questions as to whether the Slab Users or Stone Builders were the first to colonize the area; whence they came, and when; and with which of the waves of colonization outlined by other students of the area they would probably be identified. It may be found as our store of accurate knowledge increases that many of the elements mentioned above are wrongly classified. But it is my belief that the work of the next few years will prove at least the general conclusions which underlie this tentative grouping of elements; that the greater part of the culture of Polynesia was made up of the combination of the elements of two great cultural infusions; that it will be possible to resolve the cultural complexes of the various island groups into constituent elements which will be found to have been originally characteristic of these two strata; and that these groups of elements will be capable of being traced back through the regions to the west-

[1] See W. H. R., Rivers "Sun Cult and Megaliths in Oceania," *American Anthropologist*, N. S., vol. XVII, pp. 431–445.

ward to the cultural sources whence they were derived. Mention should be made in connection with this statement that there is evidence in Tonga and Samoa of the presence of a later infusion, and that there occur here and there in the area sporadic intrusive elements.

It is felt that all these questions must be left more or less in the balance until the promised harvest of facts is reaped and garnered. Until then, when theory and discussion will be on firmer ground, may the gathering of the harvest prosper!

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THE FOSSA PHARYNGEA IN AMERICAN INDIAN CRANIA

By LOUIS R. SULLIVAN

THE fossa pharyngea, fovea bursae, or medio-basial fossa is a small oval depression in the ventral surface of the basilar part of the occipital bone. The major axis lies in the antero-posterior direction in the median line. It varies in depth from 2 millimeters to 7 millimeters. The width is approximately 4 millimeters on the average while the length varies from 5 to 11 millimeters.

The function or purpose of the fossa is not altogether clear. Anatomical text-books dismiss it with a sentence. Thompson[1] writing in Cunningham says: "An oval pit, the fovea bursae or pharyngeal fossa, is sometimes seen in front of the tuberculum pharyngeum. This marks the site of the bursa pharyngea. . . . The origin and morphological significance of this pouch are not yet solved." Romiti[2] and Agostino[3] claim that the fossa pharyngea is produced by a pharyngeal diverticulum either abnormal or accessory. This is in agreement with the opinion stated above. Perna[4] concludes that the fossa pharyngea can be explained as a survival of that part of the median basilar canal which passes below the perichondrium on the ventral surface of the basilar portion of the occipital bone. The basilar part of the occipital bone ossifies like a vertebra and the fossa is the result of the non-ossification of the hypochordal bow element due to the position of the notochordal element in this region. I am not in a position to state the relative merits of the two opinions nor am I altogether certain that they are necessarily contradictory.

[1] Arthur Thompson and David Waterson in *Cunningham's Text-book of Anatomy*. New York, 1917.

[2] Romiti, 1891.

[3] Agostino, 1901.

[4] Perna, 1906.

However, its anthropological importance and utility are not wholly dependent on its physiological, morphological, or phylogenetic significance, but in great part on its relative frequency. According to all authors consulted the fossa pharyngea is a rather uncommon structure both in man and other animals. Perna[1] and Agostino[2] give very little data on its frequency. Romiti[3] found it five times in 700 crania (0.7%). He quotes Gruber as finding it 46 times in 4000 to 5000 skulls or in about 1 percent of the cases examined. Le Double[4] records its frequency as 1.4 percent on the basis of 5000 skulls examined. Rossi[5] is the only author to my knowledge who has attempted to segregate his material racially. His results follow:

In 2911 European crania the fossa occurred 33 times or 1.31 %.
In 801 non-European crania the fossa occurred 31 times or 3.87 %.
In 240 Papuasian crania the fossa occurred 10 times or 4.16 %.
In 159 Asiatic crania the fossa occurred 7 times or 4.40 %.

The only conclusion one may draw from the above data is that the fossa pharyngea is of relatively rare occurrence and certainly

TABLE I

GROUPS REPRESENTED BY AT LEAST TWENTY CRANIA WHICH SHOW A RELATIVELY HIGH FREQUENCY OF THE PHARYNGEAL FOSSA

Group	Number of Skulls[6]	Number with Pharyngeal Fossa	Percent with Pharyngeal Fossa
"Basket Maker" Utah, Grand Gulch	97	26	26.8
Cora Indian Mexico	21	5	23.8
California Indian (Hrdlička)[7]	42	7	16.6
Huichol Indian, Mexico	32	5	15.5
Utah, Grand Gulch, deformed	22	3	13.6
Tlanepantla, Mexico	23	2	8.6
San Simon, Mexico	49	4	8.2
Tarahumare, Mexico	48	3	6.2
Total	334	55	16.4

[1] Perna, 1906.

[2] Agostino, 1901.

[3] Romiti, 1891.

[4] Le Double, 1903.

[5] Rossi, 1891.

[6] Only crania or calvaria having the basilar part of the occipital bone in good condition are included in the totals throughout.

[7] Hrdlička, 1906.

not frequent enough to be of any great significance racially. It appears to be somewhat more frequent in Asiatic crania than in European crania. But even here the material is grouped in such a way that its significance is obscured. Bearing in mind the tremendous differentiation of mankind at the present time, material studied under such headings as European, Asiatic, and Papuasian can throw very little light upon our modern anthropological problems. Especially is this true in the study of such characters as the fossa pharyngea and other anomalous conditions. There is

TABLE II

GROUPS REPRESENTED BY A SMALL NUMBER OF CRANIA BUT SHOWING A RELATIVELY HIGH FREQUENCY OF THE PHARYNGEAL FOSSA

Group	Number of Skulls	Number with Pharyngeal Fossa	Percent with Pharyngeal Fossa
Papago	1	1	100.0
Clear Creek, Arizona	6	2	33.3
Tepecano, Mexico	4	1	25.0
Guatemala Indian	6	1	16.6
Williamson County, Tennessee	8	1	12.5
Illinois	8	1	12.5
Miscellaneous Plains Indian	10	1	10.0
Otomi, Mexico	11	1	9.0
Total	54	9	18.5

TABLE III

GROUPS REPRESENTED BY A LARGE NUMBER OF CRANIA WHICH SHOW A LOW FREQUENCY OF THE PHARYNGEAL FOSSA

Group	Number of Skulls	Number with Pharyngeal Fossa	Percent with Pharyngeal Fossa
Tarascan, Mexico	130	7	5.4
Hank O'Kala, Huata, Bolivia	17	1	5.3
Salish, Washington	24	1	4.3
City of Mexico	25	1	4.0
Chinook	92	3	3.3
May's Lick, Kentucky	45	1	2.2
Kwakiutl	87	2	2.2
Eastern Eskimo	50	1	2.0
Takana Chullpa, Bolivia	50	1	2.0
Peru, Coastal Region	58	1	1.7
Charassani, Bolivia	144	2	1.4
Tama Tam Chul!pa, Bolivia	184	2	1.0
Kupa Pukeo Chullpa, Bolivia	144	1	.7
Total	1050	24	2.3

every reason to believe that these characters develop in individuals and are transmitted by inheritance. Their local distribution is of much greater significance than their racial distribution.

TABLE IV

GROUPS IN WHICH NO PHARYNGEAL FOSSAE WERE FOUND

Group	Number of Crania Examined
Chuckchi, Siberia	7
Eskimo, Indian Point, Siberia	32
Eskimo, St. Lawrence Island, Bering Strait	13
Eskimo, Alaska (Point Barrow)	102
Athapascan, Alaska	8
Tsimshian	9
Haida	40
Yakima	15
Salish, Eburne, British Columbia	54
Salish, Kamloops	13
Salish, Nanaimo	13
Salish, Thompson	26
Salish, Bella Coola	20
Salish, Saanich	14
Salish, Lillooet	8
Kwakiutl, Nimkish	41
Kwakiutl, Nootka	23
Kwakiutl, Bella Bella	10
Washington State, Miscellaneous	15
Oregon State	27
California	21
New Mexico, Pueblos	86
Arizona, Chaco Cañon	22
Colorado	6
New York State	33
Massachusetts and Connecticut	6
Ohio (Madisonville)	17
Michigan (Saginaw)	7
Virginia	1
Georgia	1
North Carolina	1
Florida	25
Mexico, Yaqui	7
Mexico, Casas Grandes	11
Mexico, Zacateco	4
Columbia, Santa Marta	10
Peru, Maranon Country	20
Peru, vicinity of Cuzco	18
Peru, Sillustani	11
Peru, Cachilaya	34

TABLE IV.—*Continued.*

GROUPS IN WHICH NO PHARYNGEAL FOSSAE WERE FOUND

Group	Number of Crania Examined
Isle of Titicaca, Bolivia	64
Isle of Cojato, Bolivia	2
Bolivia, Chujun Paki	95
Bolivia, Lluchini Amaya	18
Bolivia, Belen Chullpa	8
Bolivia, Churkoni Chullpa	55
Bolivia, Tiahuanaco	3
Cape Horn,	3
Total	1079

TABLE V

TOTAL FREQUENCY OF FOSSA PHARNYGEA IN AMERICAN CRANIA

Total Crania Examined	Total Crania with Fossa	Per cent of Crania with Fossa
2517	88	3.5

I have not much non-American material at my disposal but the small amount available suggests that the fossa pharyngea occurs with a much greater frequency in some areas than in others. Out of five crania from New Hebrides two have the fossa pharyngea well marked. Two out of four crania from the Solomon islands have it also. The number of cases are too small to permit any valid conclusions but suggest a high frequency. In a series of thirty Hindu crania and forty Bedouin-Samaritan crania the fossa pharyngea was not found.

Turning to the American material I first became interested in the fossa pharyngea during the study of a group of Basket-maker crania from Grand Gulch, Utah. About twenty-five percent of the crania examined showed a larger or smaller fossa pharyngea. A little later I encountered it again in some Mexican Indian crania. Hrdlička[1] also found it in his examination of California Indian crania.

I then decided to examine all the Indian and Eskimo crania in the collections of the American Museum of Natural History. The results are tabulated in Tables I to V. Considering the crania as a whole the fossa pharyngea is not of very frequent occurrence in the American Indian and Eskimo. Of the 2517 crania examined it was present in 88 of them or 3.5 percent of the cases. This per-

[1] Hrdlička, 1906.

centage is somewhat lower than that found by Rossi in miscellaneous collections of Asiatic and Papuasian crania.

When we consider the frequency in local groups the distribution becomes significant. All of the groups of high frequency in Table 1 are in the southwestern United States and Mexico. However it was not found in the crania of the pueblo peoples of New Mexico, Arizona, or Colorado. The distribution follows quite closely the distribution of the linguistic stocks tentatively grouped together as Uto-Aztecan. The crania in which it occurred with greatest frequency were moderately elongated with a cranial index averaging about 76 to 78. There is some overlapping in the distribution, notably in the case of the Otomi and Tarascan groups. This could undoubtedly be explained by contact and intermixture. On the other hand the fossa was not found among the Yaqui or Zacateco crania. In a few cases our material is inadequate to serve as a basis for valid deductions. This is true especially in the case of the Papago, Clear Creek, Arizona, and Otomi material. While our material as a whole may be taken as a fair sample in many areas, it is particularly deficient in the Plains area, Southeastern area, Plateau area, and in eastern and southern South America.

On the basis of the material at hand it seems that the frequent occurrency of the fossa pharyngea is limited to that area of North America which is or was the home of the Uto-Aztecan linguistic stock. The Basket-makers belong undoubtedly to the physical type which predominates in the Uto-Aztecan speaking peoples. It seems fair to assume that they also spoke some related dialect. From the data at hand we can only speak of southern affinities. In order to determine northern relationships it would be necessary to examine Plateau and Plains material. Such material is not at present at my disposal. The point I wish to make is that such characters as the fossa pharyngea have a similar distribution to that of the cephalic index, stature, etc., and are of equal value in determining the relationship of local groups. I hope that other collections of American crania may be studied for the presence or absence of the fossa pharyngea.

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BIBLIOGRAPHY

Agostino, Rizzo, "Canale cranio faringea, fossetta faringea, interparietali e preinterparietali nel cranio umano," *Monitore Zoologico Italiano* vol. XII, Anno. 12, 1901.

Hrdlička, Aleš, "Contribution to the Physical Anthropology of California," *University of California Publications in American Archaeology and Ethnology*, vol. IV, no. 2, 1906.

Le Double, A. F., "*Traite des Variations des Os du Crane de l'homme.*" Paris, 1903.

Perna, Giovanni, "Sul canale basilare mediano e sul significato della fossetta faringea dell'osso occipitali," *Anatomischer Anzeiger*, vol. XXVIII, Jena, 1906.

Romiti, Guglielmo, "La Fossetta Faringea nell'osso Occipitale dell' Uomo," *Atti della Societa Toscanadi Scienze Naturali residente in Pisa*, Memoire, vol. XI.

Rossi, Umberto, "Il canale cranio-faringeo e la fossetta faringeo," *Monitore Zoologico Italiano*, vol. II, Anno. 2, 1891.

THE CULTURAL AND SOMATIC CORRELATIONS OF UTO-AZTECAN

By P. E. GODDARD

MODERN anthropology has one practically undisputed dogma. Culture being independent of biological inheritance is a thing separate from race or a particular biological strain. Culture, of course, includes language. In the middle of the nineteenth century the linguistic students in Europe used to speak of an Aryan race as well as Aryan languages. Toward the end of that century nothing could be more heretical than to speak with so little discrimination. This lesson of the separateness of language and race was exceedingly important in Europe and equally so in America.

Dr. Wissler[1] has recently reopened the subject by pointing out that actual conditions in North America do show a correlation between physical types, language, and other elements of culture. The Eskimo have skulls sufficiently peculiar to be easily distinguished, a culture of their own, and a language shared in only by the Alieut. There are also the Caribou-hunting, Athapascan-speaking peoples of the Mackenzie drainage.

On *a priori* grounds there ought to be some correlation between physical type, language, and culture. It is true that the body itself is derived by a peculiar biological mechanism, and that this has little or no influence on language or the variety or type of culture. Language and culture however are normally derived largely from the parents and grandparents, the same individuals from whom physical peculiarities are inherited.

If we imagine a valley of ample extent, the walls of which constitute definite barriers, occupied by a single family, a hundred generations should produce a definite biological strain of consider-

[1] *The American Indian*, chap. XIX, pp. 327–341.

able uniformity, a common language, and a common general culture.

It is perhaps permissible to consider this the normal, expected condition. When such correlations do not exist interferring conditions are to be sought. An African race speaking English in North America is certainly unusual enough to require an explanation.

If a Siouan language is found near the south Atlantic coast of North America, one quite naturally speaks of a movement of peoples from the Plains region which carried the language southeastward. It is fairly proper to attempt a reconstruction of the distribution of the population in America on the basis of a correlation of language and physical type bearing in mind however that this correlation does not depend upon a casual relation. One of the main difficulties in such attempts at reconstruction has been the intangibility of the characterizations of the physical strains. Even when to an experienced eye the biological differences in tribes can be recognized, it has been difficult to reduce these observations to a statement or formula. The Eskimo are an exception. Prevailing longheadedness also is sufficiently uncommon to differentiate an occasional group.

Particularly interesting has been the differentiation in southern Utah of two types of culture. One of these is known as Cliff-dweller and the other Basket-maker. The former built many-roomed stone houses, and made several varieties of pottery. The latter did not build permanent houses, and made little pottery. That the basket-making peoples did not acquire the house-building, pottery-making habits, was demonstrated when it was observed that basket burials were always associated with the remains of people with unusually long heads which were in no instance deformed. The stone house-building people practised the flattening of the back of the head. Even if the heads had not been shortened artificially they are prevailingly less long than those of the basket-making people.

Now these basket-making people had certain elements of culture which connect them with the far south. They are in fact the

northern representation of a broad general culture which formerly extended southward to Chili. The important common elements may be named as the raising of maize, grinding it on a metate, the raising of cotton and weaving it and other vegetable fibers on a simple frame loom, the wearing of sandals, and the use of the spear thrower. The culture of maize originated far south of Utah. It is probable agriculture as well as the other arts mentioned above reached Utah by transmission from one people to another.

We have recently learned that the building of many-roomed houses of stone and adobe, and the manufacture of corrugated and paint-decorated pottery are arts which arose in the Southwest itself. While we have no conclusive evidence, it seems probable that the more highly developed forms of present day Pueblo religion, the dramas and processions, were also developed in the Southwest. Some of the simple foundation elements of the religion however extend beyond the Pueblo region. Of these may be mentioned feathered offerings, color symbolism, the use of cornmeal for sprinkling, etc.

Powell, actuated by a commendable scientific caution, separated the languages of the southern plateaus, the Shoshonean, from the Piman of southern Arizona and northern Mexico, and from the Nahuatl of the valley of Mexico. Kroeber[1] in 1907 reunited these groups under the name of Uto-Aztekan. We have then a large linguistic group stretching from southern Mexico nearly to the Canadian boundary.

While these Uto-Aztecan-speaking peoples cannot be said to have occupied a valley similar to the hypothetical one mentioned at the beginning of this article, they did occupy a series of such valleys, extending from north to south. The Rocky mountains and the high Sierra of Mexico formed a barrier on the east. The Sierra Nevada and the Mohave desert were a partial barrier on the west. Unlike our hypothetical valley, the Uto-Aztecan range was so great that instead of linguistic uniformity we find three great linguistic subdivisions. The Shoshonean proper may be imagined

[1] "Shoshonean Dialects of California," *University of California Publications in Archaeology and Ethnology*, vol. IV, pp. 66–156. Berkeley, 1907.

as having been originally north of the Colorado river.[1] From the Gila southward, west of the Sierra Madre are the Piman peoples; south and east of these mountains are the Nahuatl of Mexico valley. These linguistic groups were evidently in existence in the sixteenth century, and the changes in the languages since they were first known have been slight. For the development of such linguistic groups milleniums should be allowed.

As oil follow[illegible]up a wick, so the culture of the south may be imagined to have passed northward among this people of a common speech. It went north along this particular line as far as cotton and maize can be grown. Had the culture followed the Pacific coast it might have reached Oregon at least.

We seem then to have a fairly definite correlation between language and a culture which has no necessary relation to language. Have we a further correlation with a definite physical type? The longheadedness of the Basket-makers, the Pima, and Papago, and certain Mexican tribes has indicated such a special type. The paper by Mr. Sullivan on the "Fossa Pharyngea" establishes a definite physical group having a common line of inheritance. The very insignificance of this fossa precludes any argument for its occurrence as a result of environment. The backbone of southwestern physical, linguistic, and cultural early distribution seems to have been established. It remains to trace similar relations and connections for the groups east and west of this Uto-Aztecan speaking, maize and cotton raising, longheaded people who in uncommon numbers, have a fossa pharyngea. With a physical type definitely correlated with Shoshonean speech it ought to be possible to determine whether any considerable number of such a physical strain were incorporated in the Shoshonean-speaking Hopi villages. If a definite physical type can be established for the stone house building peoples of the San Juan drainage it should be possible to trace the movement of the people themselves as well as their culture. This is especially promising since types of pottery of definite geographical and temporal sequence have been established.

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[1] The Comanche in Texas and the Paiute in southern California have been assumed to have left the plateaus in fairly recent times.

WHO WERE THE PADOUCA?

BY GEORGE BIRD GRINNELL

ACCOUNTS of early exploration in the West seem to show that the Padouca, under their various similar names, occupied the central plains from the Black Hills region south to the Arkansas or beyond. The name was familiar for one hundred years, and then passed out of use. It appears on early maps, but not in a way to indicate much about the tribe's relationship to other peoples. Some of these maps are mentioned here:

D'Anville's map, said to be drawn in 1732, published in 1755, has the Kansas river marked "R. des Padoucas et Kansez."

du Pratz's map of Louisiana, 1758, shows Padouca villages in four places:

1. On north bank of Arkansas river about northeast of Santa Fe.
2. On the head of a southern branch of the Kansas river—possibly the Smoky Hill. This village is marked "Gr [and] Village of the Padoucas."
3. On the n. bank of the n. fork of Kansas river [(?) Republican river] about due north of the Grand village.
4. On a southern branch of the Missouri, which probably is intended for the Platte.

He says the distance from the Padouca village to the Kanzes village on the Missouri is 65½ leagues. The length of a French league is uncertain, but it was not more than 2.75 miles. This would make the distance perhaps 180 miles or less and would put the Grand Padouca village about as far above the forks of the Kansas river as Ellsworth, Kansas.

This map shows no Apaches at all in the plains east of New Mexico and north of Texas.

Palairet's map, 1755, marks Kansas river, "R. Padoucas." Sets down village of the Padoucas as situated 232 miles west of the

junction of Kansas river with Missouri river and on the 40th degree of north latitude. This would be on the Republican river.

The old Spanish map brought back by Lewis and Clark, and printed in the Atlas Volume VII of Original Journals shows little circles indicating fixed villages on the north bank of the Platte, and marked "Padouca Inds." This map was probably made late in the eighteenth century, perhaps 1790 to 1800. I know of no record of whites visiting the Padouca on the Platte, but the traders from St. Louis were among the Pawnees from about 1750 onward at irregular intervals.

Mallet, in 1739, applied to one of the forks of the Platte the name *Padocas river* and on the Spanish map just referred to, the south fork of the Platte is marked *Padouca Fork*, and James in Long follows this.

The locations given for the Padouca on the French maps after 1720 seem to show that they were in the heart of the plains country, reaching from south of the Canadian north across the head of that stream, across the Arkansas, the Kansas river, to and well beyond the Platte. The French maps sometimes divide these people into white and black Padouca just as they divided the Pawnees into white and black.

Omaha and Ponka traditions speak of a Padouca village in the sand hills near the Niobrara river or the head of the Elkhorn. It was by a lake and is so shown on the du Lac map, but the village was abandoned long before his day.

There was a Padouca village on the Dismal river north of the Platte river, which was visited by Ponkas during their wanderings on the plains at an early date. This village is mentioned in Fletcher and La Flesche.[1] It is possible, but not likley, that this may be the same Padouca village shown on du Lac's map. The country near the head of the Dismal river formerly had many lakes, some dry and some with water. There are many lakes in that part of Nebraska.

The Omaha call the Dismal river "Where the Padouca built breastworks."

[1] *Twenty-seventh Annual Report, Bureau of American Ethnology*, 1911, "The Omaha," p. 88.

The Caddoan people, visited in 1719 near the junction of the two forks of the Canadian, spoke to La Harpe and du Tisne of Padouca villages on the Arkansas, the Cimarron, and the Canadian, east of the Spanish settlements.

We have always been taught that the Padouca were Comanche, but, in fact, were they so?

The term, so far as I know, is not used by the Spaniards, who were more likely to speak of *los gentiles Cumanches*, as in documents quoted by Bandelier.[1] Bandelier says that between the years 1700 and 1705 the Utes brought the Comanches first down into New Mexico at the pueblo of Taos. Up to this time the Utes and different bands of Apaches are the only *gentiles*—wild Indians—mentioned in the plains to the north and east of the New Mexico frontier. The Spanish documents quoted by Bandelier in the same paper seem to show that there were Apaches living toward the plains east of the most northerly Spanish settlements. In 1719, the Apaches Jicarillas lived at a place called Jicarilla about thirty miles from Taos and about one hundred miles from Santa Fe, somewhere near the head of the Canadian river. Bancroft (*History of New Mexico*, p. 239) says that in 1724 this settlement was attacked by Comanches who carried off half the women and children and killed all the rest of the inhabitants. The Apache village called Quartelejo was one hundred forty miles north by east of Jicarilla. About 1748, the remnant of these Apaches was driven by the Comanche to take shelter at the Taos and Pecos pueblos.

Bandelier says that Quartelejo was about three hundred miles northeast of Santa Fe and believes it was in western Kansas near the southern line of Nebraska. The documents state that the distance was carefully reckoned—*demarcado*. Every Spanish expedition had with it a man who carefully reckoned each day's march and set down the distance. The site of Quartelejo is thought to have been identified recently—in Scott county, Kansas.

In 1719, Don Antonio Valverde Cossio, Governor in New Mexico, made an expedition to Quartelejo and there heard of those Pananas who lived on a great river seventy leagues north of Quar-

[1] *Papers of the Archaeological Institute of America*, vol. v, p. 184.

telejo, and that among the Pananas were some Frenchmen. Panana was the Spanish name for Pawnees, who had long been known to the New Mexico Spaniards, and is the name today applied to the Pawnees by all the Pueblo Indians, including the Zunis. In March 1720, Colonel Villazur was ordered to go to the Pananas and, on his way, to establish a presidio or garrison at Quartelejo. It was later decided that a presidio could not be built at Quartelejo because it was so distant in the barren plains and because it had so little wood and good water. The Apaches, who lived there, left the place in winter, because of the lack of wood, and wintered elsewhere.

Villazur set out with a force of fifty Spaniards, armed with guns, and had with him a force of Indians constantly referred to in the documents of the time as Apaches Jicarillas. Incidentally, he took with him, besides servants, a mule loaded with his own table silverware, which later, certain narrators referred to as "church plate." The expedition set out June 14, 1720, and on September 6, Tamariz, a soldier, reached Santa Fe with the news that the command had been destroyed.

A Pawnee slave among the Apaches had been taken along by Villazur as guide and, after sixty-two days' march from Santa Fe, the company reached a large river August 15th. There was a Panana village on the north bank of the river and Villazur sent his Pawnee man to the village to speak to the people; but the man did not return. Villazur became alarmed and retreated one day south and camped on a river and in the night advanced again and camped on a southern branch of the river where the Pawnees were. The next morning he was attacked with "volleys of musketry and arrows." His Apaches fled and presently such of the Spaniards as were left alive also ran off. Forty Spaniards, including Villazur and—probably—the priest, were killed, and about ten escaped and reached Taos. The Spaniards declared that there were Frenchmen with the Pawnees. This story is well known and has often been told.

Under date of July 20, 1721, Bienville, then Governor of Louisiana, wrote a letter declaring that two hundred Spaniards and a

large force of Padoucas had marched toward the Missouri to attack the French in the Illinois country; but they were attacked by the Otoes and the Panimaha, who killed all but one Spaniard and many Padoucas. This one Spaniard, he said, was a prisoner among the Indians, and de Boisbriant, commandant in the Illinois, had sent for him. (Margry, vol. VI, p. 386).

In this Bienville was only repeating what de Boisbriant had written him April 24, 1721. It is to be noted that these Frenchmen said that the massacre was on the Kansas river, while Bandelier and Dunbar believe it was on the Platte.

The interesting point as to all this is that the Spaniards declared that the Indians who accompanied Villazur were Apaches, while the French, on information from tribes of the Missouri, referred to these native allies of the Spaniards as Padoucas.

Bourgmont, in 1724, left the Kansas village on the west bank of the Missouri north of the Kansas river and marched west or northwest for ten days to reach the Padouca village. A part of his people were on foot, and part mounted. He writes quite fully of the country he passed over and what he says of it suggests that the small camps he passed and this large Padouca village may have been somewhere near the junction of the Saline and the Smoky Hill rivers. He says these people hunt in summer and winter but are not entirely wandering—are partially sedentary—for they have villages with large houses (*cabanes*), and do some planting. The nation is very numerous and extends for about two hundred leagues. Those distant from the Spanish settlements used flint knives to skin their game and flint axes to cut down trees. The village visited had about one hundred and fifty houses, and the population is given as eight hundred warriors, fifteen hundred women, two thousand children, or nearly thirty persons to a house. This implies permanent houses like those of the earth-lodge people of the Missouri River valley. Into an ordinary skin lodge or tipi not more than ten or fifteen people could be crowded. Thus it would seem that the Padoucas must have lived in villages similar to those of the Pawnees and other earth-lodge people. The Comanches are not supposed to have had permanent houses, or to have

planted. Stories told by the Pawnees within forty years declare definitely that the Comanches knew nothing of the growing of crops.

Spanish documents quoted by Bandelier say that the Apaches of New Mexico in the early part of the eighteenth century lived somewhat in the same way as did the Padouca described by Bourgmont. They had houses, jacales, and huts where they planted in spring, but they did not live at these villages the year through.

It is believed that during the eighteenth century, almost from its first years, the Comanches began to make raids on the people of the plains and especially on the Apaches who finally were driven in from some of their settlements close to the Pueblo villages.

The Apaches were never mentioned by the French, Apache being a southwestern term, the use of which seems never to have extended into French territory. The French hardly refer to any tribes on the plains or on the New Mexican frontier except the Padouca, until the time of Mallet, 1739, when the French first reached New Mexico and found "Laitanes" on the New Mexican frontier. On the other hand, the Spaniards seem to mention no large tribes between the Apache, who occupied the country beyond the New Mexican frontier, and the tribes near the Missouri river. They speak of the Apache as extending out from the New Mexican borders and beyond them to the east were the Panana, Jumano, and other Caddoan tribes; and to the northeast beyond the Apache were other Pananas who were the Pawnees of the Platte.

It must be remembered that scarcely any original observations were made by Lewis and Clark away from the Missouri river. They saw something of the Sioux and something of the village tribes, but for information about the people of the plains, were obliged to depend on the Indians and the few white men who had been long in the country.

For this reason in cases where they report only statements at second hand, the accounts of early explorers generally must not be taken too literally. On the other hand, those who saw the Indians about whom they wrote no doubt reported with substantial accuracy on matters which came under their own observation.

I give below certain mentions of the Padouca by early writers:

Pénicaut, 1698–1722, B. F. in French, *Annals of Louisiana*, New Series, 1869, p. 152, notes disappearance of Padouca who claimed a wide country according to the Delisle map—1712—but are supposed to have broken up into Wetepahatoes, Kiawas, and Kattekas. Lewis and Clark obviously took this from Pénicaut.

P. 155, mentions Heitans.

Mallet Brothers 1739–40, Margry, vol. VI, p. 455. They seem to speak of Ietan and Padouca as distinct. Of the Ietans—Laitanes—it is said that they wander in the country north of Taos, and are not Christians. A camp met by the Mallet brothers had a Ricara captive. After the Mallets had started east, they met a camp of Laitanes on the head of a branch of the Arkansas, possibly the Canadian. Further east in the plains, they met two men and three women of the Padouca, who became frightened and ran away.

Du Lac 1802, Paris and Lyon, 1805; pp. 225–26; a nation dwelling on the Missouri; Peducas, 300; furnish about fifty skins to the upper Louisiana traders. This list includes tribes near, as well as those on, the Missouri river and this band of Padouca or Cataka may be the one spoken of by Lewis and Clark as sometimes visiting Rees and Mandans.

P. 261: "The great nation of the Padaws who range along the Platte river is only about ten days' ride from the Ricaras," then estimated to number 25,000. This is the same French nickname given for the Padoucas by Lewis and Clark. The description would seem to place their villages about on the heads of the Loup river. Immediately afterward he mentions the wandering Baldheads or Halisanes, and tells where they roam—on the Arkansas and west to the mountains of New Mexico.

P. 309: Tells how the Otoes on their summer hunt were attacked by a war party of Halitanes.

These references suggest that du Lac considers Halitanes, Halisanes, Baldheads, and Tetes Pelees as different from the Padaw. The first named are the Comanche. Like this, the information given Lewis and Clark and du Lac, seems to show that the Padaw

or Padoo were not Comanche, that they were supposed to inhabit the country near the Upper Platte, and that some of them at times traded at the Missouri.

Trudeau, 1795, *Missouri Historical Society Collections*, vol. IV, p. 31, describes the Pados almost exactly as du Lac has done and seems also to locate them on the heads of the Loup river. La Salle, in 1680, when on the Illinois river was visited by Indians from the west and they spoke to him about the Gattahka and other tribes among whom were the Pasos. Were these perhaps the Pados?

Lewis and Clark Original Journals, vol. I, p. 190, gives information obtained at Ree villages, 1804. In the list of tribes that live on the plains to the west of the Rees one is given Cat-tar-kah, interpreted as Paducar. This information was presumably had through a French interpreter, for the other tribal names in the list are translated into English. This would seem to show that the French on the Upper Missouri considered the Cataka to be Padouca.

Volume VI contains a table of tribes made up at the Mandan villages in the winter of 1804–5, and so probably came from Mandan, Hidatsa, and French information.

P. 90: Cataka—a tribe that occasionally come to the Mandan villages to trade as do also the Cheyennes, Kiowas, Arapahoes, Staetans, and Crows.

P. 101: Cat a kah, their own name; Ha ka?, given thus with a question as French name for these people; 300 people; traders do not visit them; they at times visit the Ree villages. This Cataka tribe roves with the Dotame, and Nemousin, from the head of the Loup Fork north to the heads of the southern branches of the Yellowstone. "One of these tribes is known to speak the Padoucan language."

P. 102: Dotame—do-ta-ma, their own name; no French name given. They speak the Padouces language; 120 people; no traders visit them; they never come to the villages on the Missouri; raised many horses.

P. 102: Nemousin, the other band said to rove with the Cataka-ni-mi-ou-sin, own name; no French nickname; 200 people; never

visit the villages on the Missouri; the Handbook identifies these people as Comanche.

P. 106: Alitan or Snake Indians—French nickname Gens du Serpent, speak Alitan language. Very numerous; have many horses; all tribes on Missouri war on them; there are three divisions: 1. Aliatan, Snakes, or Só-so-na, trade with Crows and have some trade with Spaniards; 2. Those of the West who live west of the mountains; 3. La Playes occupy plains from head of Arkansas south across the Red river.

P. 108: Padoucas—English name, French nickname Padoo, Padoucies is their own tongue. Live in villages on heads of Platte and Arkansas, trade with New Mexico; many horses. Yet almost immediately Clark says he could get no definite information about this once powerful nation, and quotes French writers. Speaks of a fork of the Platte bearing the name of the tribe and conjectures that the nation had broken up and become individual small tribes. This from Pénicaut.

All this including the Key to the Tribes used in Indian Statistics, vol. v, p. 82, shows that from Lewis and Clark we learn little more than this: that in 1804 the one tribe well known at the upper Missouri villages who were called Padouca were the Cataka.

Pike's Exploration made in 1806. Coues Edition. Coues points out that Pike's Tetaus is a misprint or corruption from Ietans, which is evident. On the map at the end of the third volume is indicated Ietan country. Other plains tribes villages are indicated on Kansas, Platte, and Loup rivers.

P. 535: the Tetaus who occupy the heads of Red and Arkansas rivers, the Canadian, and the Arkansas—and extend to the Del Norte—and the Utahs and Kyawas who live in the "mountains of North Mexico," are the enemies of the Pawnee.

P. 536: "The Tetaus, Camanches, as the Spanish termed them [called] Padoucas by the Pawnees,"—the word "called" is inserted in brackets. This information was given Pike by the French interpreter and seems to show beyond question that at this date the French on the lower Missouri identified the Padouca as Comanche. I do not suppose that the Pawnee generally used the term

Padouca. They had their own name for the Comanches, *La ri ta*, from which possibly might be derived La li tanes, Laitanes, and perhaps Alitans, which however Mooney derives from Ietan.

P. 536: The Tetaus are a powerful nation, wandering, do not plant; bounded on south by tribes of Lower Red river, on west by Spanish settlements, on east by Osages, Pawnees, and others, and on north by Utahs, Kyaways, and unknown tribes.

P. 591: Statistical Table says Tetan, English name; Comanche, Indian name; ——, French name; 8200 people. Then he says, the Osages made war on the Tetaus, on several other tribes, and on the Padoucas. This points to the Padouca as distinct from the Tetau and others.

James in Long's Expedition, Philadelphia, 1823. Mentions the Padouca in only two places.

The Pawnees, through a French interpreter, described the tribes with which the Skidi war party had a big battle south of the Arkansas in the winter of 1819–20, as Ietans, Arrapahoes, and Kiawas.

If Padouca was the name used by the Pawnees generally for the Comanche, as Pike states, why did not the Pawnee and Oto speak of them by that name to James in 1820, instead of using the term Ietan?

We have, in 1802, du Lac speaking of Halisanes, Halitanes, Tete Pelees, and Baldheads; Lewis and Clark, 1804, Alitans, or La Plays; and James, 1820, Ietan, or La Plais, "Bald Heads, and a few Shoshone or Snake Indians," and in another place "Ietans, Comanche, or Snakes."

In 1820 there was a famous Oto chief named Ietan who got his name from his exploits against that tribe. If Padouca was the Oto and Pawnee name for the Comanche, why was not this man called Padouca instead of Ietan?

Journal of Jacob Fowler, 1821–22. In November 1821, Glenn and Fowler's party met Kiowas, and two or three days later 350 lodges of Highatans. These people held a council and demanded the presents which Major Long had promised them when he had met them in 1820. Fowler on counting the increasing camp found

400 lodges of the following bands: Ietans, Arrapohoes, Kiawa-Padduce, Cheans, Snakes; the Ietans most numerous. This seems to suggest that the Kiawa-Padduce were Kiawa-Apaches, for the people whom Fowler calls Kiawa-Padduce in one place and in another place Padduca, were with the Kiowa and were not Comanche. Yet Glenn's interpreter, Roy, was a man from the Osage country, and in 1853 Neighbors says Padduca was the Osage name for the Comanche or Ietan.

James' *Three Years Among the Indians and Mexicans*, Mo. Hist. Soc. 1916; does not use the name Padouca nor Ietan, but speaks of the Comanche. In one place he speaks of an Ietan chief with a big party of Pawnees met on the Arkansas June 18, 1822. This is probably the same party of which Fowler speaks, Pawnees and one Ietan chief, but Fowler says that this Ietan chief had recently been to Washington; and it seems probable that he was the Oto chief named Ietan, and not a Comanche at all. James quotes a letter in the Louisiana Gazette, a Missouri newspaper printed in 1810, where is mentioned the "Aytan, or Padoco Nation."

W. P. Clark, *Indian Sign Language*, p. 33. W. P. Clark, about 1880, met a Kiowa-Apache about seventy years old who told him that he had been born on the Missouri river northeast of the Black hills, a statement which indicates that as late as 1810 the Kiowa-Apaches were still in the country where the Cataka had roamed in the days of Lewis and Clark.

All this seems to suggest the probability that in early days the people known as Padouca were not Comanche. If the Comanche had then occupied the central plains, where the French place the Padouca, the Spaniards would have known of it and would have recorded the fact. That the Utes first brought the Comanche to Taos, and that these two tribes were associated for some years thereafter, and that about 1730–40 the Comanche are known to have occupied the country from Taos to and beyond the Arkansas, justifies, to my mind, the belief that the Comanche came South near to the mountains.

Our later information about them tends to strengthen this suggestion. Ruxton, p. 254, speaks of a tradition that the Comanche

and Shoshoni separated on Fountain Creek north of Pueblo in the edge of the mountains. Pike, Lalande, Pursley, Chouteau and De Mun, James, and other early sources, all mention the Comanche and "Snakes" as using trails in the edge of the mountains or among the mountains on their frequent journeys from the Arkansas to the Platte. One of the very early mentions of the Comanche out in the plains is in Bandelier where it is stated that in 1744, thirty-three Frenchmen visited the Comanche on the Rio Jicarilla at the head of the Canadian, east of Taos, and traded them guns. A few years later, we read in the Texas annals that the Comanche are pressing down to Red river, forcing the Lipans southward into Texas.

The mention by La Salle's men of a tribe in Texas, whose name they spell Caumuche, has been thought to show that the Comanche were in Texas in 1680; but it is a mere guess, as I suppose, that this name has anything to do with our name of Comanche.

The tribe spoken of as the Kiawa-Padduca by Jacob Fowler in 1821 may well have been Kiawa-Apache, and the name points to the survival of the use of the name Padouca for the Apache as late as 1821.

What has been written shows that the Spanish records of the expedition under Villazur in 1721 called the Indian allies Jicarilla-Apaches, while the French account called these same Indians Padouca.

Bourgmont says that the Padouca had fixed villages with large houses and that they planted; and the early Lewis and Clark map records fixed villages for that people. On the other hand, the books and the Pawnee Indians declare that the Comanches did not raise crops, and had no fixed villages.

Du Lac implies that the Padaws and the Halitanes were different tribes.

Lewis and Clark say that the Cataka were Padouca and that the Snakes, Alitan, La Plais, were different from the Cataka.

Pike says that Padouca was the Pawnee name for the Comanche. He also says that the Tetaus or Tetan—Ietan—were Comanche. Then he says that the Osages made war on the Tetans and on the

Padouca, thus implying that these are different tribes. He speaks also of the Tetaus as different from the Utahs which is evidence that Mooney's conclusion that the Ietans are Utes is not well founded—but Mooney does not say that the Ietans of later days were Utes—in fact, the books generally imply that the Ietans are Comanches.

Jacob Fowler found, with the Kiowa, some people whom he called Kiowa-Padduce and Padduca—people who were not Comanche.

W. P. Clark, about 1880, met a Kiowa-Apache about seventy years old, who said he was born on the Missouri river northeast of the Black hills.

The evidence is not conclusive as to who were the Padouca, but it convinces me that the Padouca were not Comanche and I am disposed to regard them as Apache.

NEW YORK CITY

NASS RIVER TERMS OF RELATIONSHIP

By E. SAPIR

THE following Nass River Indian (*Nɪsqa''ᵉ*) terms of relationship were obtained in May, 1916, from Chief C. B. Barton (Indian name *P'ä·ł*), of Kincolith, B. C. Chief Barton was at the time engaged as deputy in Ottawa on tribal business.[1] The orthography here employed is the same as that explained in my *Sketch of the Social Organization of the Nass River Indians* (Geological Survey of Canada, Anthropological Series, Bulletin no. 7, 1915); see pp. 29, 30.

I. Nass River Terms

In the following table it is to be understood that, unless otherwise indicated, a term may be used by either a male or a female. Most or all of the terms doubtless have a wider, phratric or clan, significance than is here indicated. The ending -ɪ'(ᵢ), -ᵉ'(ᵉ), -'ᵢ is the first person singular possessive suffix, "my."

Note further:

1. Step-relations are designated as real relations.

2. The parents of a married couple are not looked upon as relatives. This is strikingly different from the custom of many western American Indian tribes, among whom there is frequently a specific term for "child-in-law's parent."

3. The parent-in-law of a brother or sister is not considered a

[1] Since this set of terms was obtained from Mr. Barton, an opportunity has presented itself in April, 1920, to go over the data with two West Coast Indians visiting Ottawa on Government business—Mr. P. C. Calder, a Nass River Indian of the *Ɂɑɬxaɬ'ᵉ'ⁿ* tribe, from the village of Greenville, and Mr. G. Matheson, a Tsimshian Indian, who was brought up among the Nass River Indians and is thus better acquainted with the Nass than with his own dialect and who has for a number of years resided in the Lower Fraser country. As both of these Indians are also conversant with the Tsimshian dialect, I obtained from them an independent set of Tsimshian kinship terms. This set supplements a Tsimshian set obtained in 1918 from Mr. W. Beynon, of Port Simpson, B. C., Mr. Barbeau's chief Tsimshian interpreter. I shall present my Tsimshian data in another paper.

Term	Translation	Vocative
1. *'o''ls-ɩ'*	my great-grandfather, great-grandmother (see also 2 and 3)	*'o''ls*[2]
2. *nɩye''-e'*[4]	my grandfather (paternal *or* maternal); may also be used for great-grandfather; grandparent's brother	*ye''*[42]
3. *ɳɬ'se'''ɬ's-ɩ'*	my grandmother (paternal *or* maternal); may also be used for great-grandmother; grandparent's sister	*tsi''ls* (note unglottalized *ts*, doubtless due to imitation of simplified children's pronunciation)[2]
4. *hoxdä''k'en-e'*	my grandchild; great-grandchild	*hoxdä''k'ɩn*[4]
5. *nɔgwo''d-ɩ'*	my father; father's brother; maternal aunt's husband	*pä'p*[4] (said by man) *hädɩ''*[4] (said by woman)[3]
6. *nɯ''-ɩ*	my mother; mother's sister	*nä''*[42]
7. *ɬko''ᵑlgw-ɩ'*, plur. *ɬg-ɩ'*	my child; man's brother's child; woman's sister's child; husband's brother's child; man's brother's wife's child; wife's sister's child; *probably also* woman's sister's husband's child	*ɬko''ᵑlkᵘ*, plur. *ɬgɩ'*
7a. *ɬko''ᵑlkum ga''ᵑd-ɩ'*	my son (*lit.*: my male child)	*nä''ɑ̈ɬ*[42]
7b. *ɬko''ᵑlkum änä'g-ai''*[4]	my daughter (*lit*: my female child)	*dä'ɬ*[2]
8. *nɔpe'p-ɩ'*	my mother's brother	*pɩ'p*[4]
9. *nɩxdä''-''*[4]	my father's sister; mother's brother's wife	*dä'ɬ*[4]
10. *kwvclɩ'c-ɩ'*	my brother's child (woman speaking); sister's child (man speaking); husband's sister's child[2]	*kwvclɩ'c*
10a. *kwvclɩ'cɳ ga''ᵑd-ɩ'*	my brother's son (woman speaking), sister's son (man speaking) (*lit.*: my male *kwvclɩ'c*)	
10b. *kwvclɩ'cɳ änä''.-ai''*[4]	my brother's daughter (woman speaking), sister's daughter (man speaking) (*lit.*: my female *kwvclɩ'c*)	
11. *wa'g-ɩ'*[4]	my brother (man speaking); man's father's brother's son; mother's sister's son	*wäk'*
12. *ɬgi''gw-ɩ'*	my sister (woman speaking); woman's father's brother's daughter; mother's sister's daughter	*ɬgi''ᵑkᵘ*

[1] Also heard as *änä''.ai''*[4] (. = glottal stop with velar resonance). In Nootka' develops regularly from older Wakashan *q'*.

[2] "My husband's sister's child" was given as *kwvclɩ'ckw-ɩ'*, but this is almost certainly merely the plural in *-kᵘ* of *kwvclɩ'c-ɩ'* and should thus be understood as "my brother's children (woman speaking), my husband's sister's children." See F. Boas, *Tsimshian*, §44 ("Handbook of American Indian Languages," *Bulletin 40, Bureau of American Ethnology*, 1911).

[3] See supplementary notes at end.

Term	Translation	Vocative
13. *kɯmxɬɪ'-'ɪ*.....	my brother (woman speaking), sister (man speaking); woman's father's brother's son, mother's sister's son; man's mother's sister's daughter, father's brother's daughter	*kɯmxɬɪ'ɪ*
14. *kwvɬxa'ω''-'ɪ*.....	my cross cousin, *i.e.*, father's sister's child, mother's brother's child	*'ω''ωs*
15. *nä'kc-ɪ'*.....	my husband; wife	*näkc*[3]
16. *łä'mc-ɪ'*.....	father-in-law, mother-in-law; son-in-law, daughter-in-law; father-in-law's brother, mother-in-law's brother	*łämc*
16a. *łä'mcɯm ga''ᵃd-ɪ'* .	my father-in-law, son-in-law, parent-in-law's brother (*lit.*: male parent-in-law *or* child-in-law)	
16b. *łä'mcɯm änä''-ai''ɪ*.....	my mother-in-law, daughter-in-law (*lit.*: female parent-in-law *or* child-in-law)	
17. *q'aɬä''ᵃn-ɪ'*.....	my wife's brother; sister's husband (man speaking)	*q'aɬä''ᵃn*
18. *kwvdjɪ''c-ɪ'*.....	my husband's sister; brother's wife (woman speaking)	*kwvdjɪ''c*
19. *k'ω''ɬ kc-ɪ'*.....	my wife's sister, man's brother's wife; husband's brother, woman's sister's husband	*k'ω''ɬ kc*
20. *łämcɬ wä''ᵃg-ɪ'*....	my brother's child-in-law (man speaking) (*lit.*: child-in-law of my [man's] brother)	
21. *łämcɬ (ł)gɪ''ɪs-gw-ɪ'*.....	my sister's child-in-law (woman speaking) (*lit.*: child-in-law of my [woman's] sister)	
22. *łämcɬ gɯmxdɬ'-'ɪs* ..	my [man's] sister's child-in-law; woman's brother's child-in-law (*lit.*: child-in-law of my sibling[1] of opposite sex)	
23. *gɯmxdɬ łä'mc-ɪ'* ..	my father-in-law's sister (*lit.*: sister of my father-in-law[2])	
24. *łgɪ''ɪsk''ɬ łä'mc-ɪ'* ..	my mother-in-law's sister (*lit.*: sister of my mother-in-law)	
25. *nɔ x̣ᵃ-ɪ'*.....	my father's brother's wife	*nɔx̣*[3]
26. *näkɬ nɯxdä''-'ɪ* ..	my father's sister's husband (*lit.*: husband of my paternal aunt)	
27. *kwvclɬ'ckᵘɬ nä'kc-ɪ'*.....	my wife's brother's children (*lit.*: brother's children (see 10.) of my wife)	
28. *wɪlä''ɪckᵘ*; *wɪlä''ɪcgw-ɪ'*.....	relative; my blood relative[3]	
29. *wwvlwɪlä''ɪckᵘ* ..	relative by marriage[3]	

[1] By "sibling" is meant "brother or sister."

[2] But not "brother of my mother-in-law," though this is quite possible etymologically. For "mother-in-law's brother," *łämc* is used (see 16).

[3] See supplementary notes at end.

relative; nor, reciprocally, is the child-in-law's brother or sister a relative.

4. Relatives by affinity continue to be called by the same terms after the death of the connecting link. Thus, a man's brother-in-law (wife's brother) is termed *q'alä·'ᵃn* even after his wife's death. This again is contrary to the custom of many western American Indian tribes.

II. Linguistic Comments

A few linguistic remarks are possible, though, for the most part, the terms do not yield to any far-reaching linguistic analysis. Most striking is the employment of distinctive vocatives. In most cases (nos. 1, 4, 7, 10, 11, 12, 13, 16, 17, 18, 19, 25) the vocative is merely the noun stem, unprovided with a possessive suffix. In a considerable number of cases, however, the vocative is different from the noun stem. Sometimes the vocative is etymologically unrelated to it (nos. 5, 7a, 7b, perhaps also 14), more often it is a shorter or otherwise modified form of the stem (nos. 2, 3, 6, 8, 9). A number of nouns beginning with *nə-* (*nɪ-*, *n̥-*) lose this element in the vocative (nos. 2, 3, 8, 9). It is probable that this prefix occurs also in the term for "father" (no. 5); possibly also in that for "mother" (no. 6).

The etymology of the *n-* prefix is quite obscure, as there seem to be no obvious analogies in the formative elements of either Nass or Tsimshian proper ascertained by Boas. It may be an old classificatory prefix for terms of relationship, now preserved only in four or five terms. Possibly, however, it is the subjective first person singular pronominal prefix *n-* "I" (*e.g.*, *ne·-ya''ne·* "I say so," contrast *de·-ya* "he says so"; see Boas, *op. cit.*, §53), originally characterizing, it may be, terms of relationship as contrasted with other nouns. In that case such a form as *nɪ-yᵉ''ᵉ* "grandfather" would originally have meant "my grandfather," only secondarily, as the use of the *n*-prefix in a possessive pronominal sense became obsolete, "grandfather." The use of the first personal singular possessive pronominal suffix *-ɪ'* in such terms of relationship would be due to the analogy of the vast majority of nouns. At any rate,

analogous pronominal usages, of an isolated nature, for terms of relationship are found in several American Indian languages.[1]

The terms *kwvclɪ'c* (no. 10), *kwvtx̣a'ω·'* (no. 14), and *kwvdji·'c* (no. 18) possess a prefixed element *kwv-*, as is clearly shown by the corresponding Tsimshian terms *sɬe·'s*, *tx̣aɔ·'* and *dzu·'s*.[2] The prefix is not listed by Boas in his grammar, but it seems not unlikely that it is identical with the *gu-* of *gulɪk̲s-* "backward; also reflexive object,"[3] the second element of which can hardly be other than the prefix *ləks-* "strange, different, by itself."[4] This analysis makes it at least possible that *kwv-* is a reciprocal prefix: "each other." The terms *kwvtax̣'ω·'* "cross-cousin" and *kwvdji·'c* "woman's sister-in-law" are, indeed, directly reciprocal terms; while *kwvclɪ'c* "child of sibling of opposite sex to speaker," though not strictly a reciprocal term, does involve what might be called "sex reciprocity" between the speaker and the connecting link.

It is barely possible that *kwv-tx̣a'ω·'* (no. 14) contains, besides, the common prefix *tx̣a-* "entirely, all,"[5] and that the stem proper is *-'ω·*. If this is so, the term may originally have been a reciprocal collective: "all cousins to one another." A stem *-'ω·* would make the vocative *'ω·'ᵐs* appear somewhat less enigmatic.

*nvwvlwɬä·'ᴵɪck*ᵘ (no. 29) is obviously a reduplicated form of *wɬä·'ᴵɪck*ᵘ (no. 28), preceded by a prefixed element *nv-*, which is either a phonetically weakened form of reciprocal *na-* "each other, one another,"[6] or another example of the relationship prefix *nə-* already discussed.

The vocative *dä·t'* (no. 9) shows a reduplicated form of the stem analogous to *pɪ·p'* (no. 8).

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[1] The hypothesis here advanced seems fairly unplausible from the purely Tsimshian standpoint. I hope, at some future time, to adduce certain comparative linguistic evidence that serves materially to strengthen it.

[2] See F. Boas, "Tsimshian Mythology," *Thirty-first Annual Report, Bureau of American Ethnology*, 1916, p. 493. Boas' Tsimshian orthography is modified to correspond to my own.

[3] *Op. cit.*, p. 323, no. 115.

[4] *Op. cit.*, p. 327, no. 133.

[5] *Op. cit.*, p. 318, no. 93.

[6] *Op. cit.*, p. 319, no. 95.

III. Discussion of Terms

1. A considerable proportion of the terms are indifferently used as regards the sex of the person designated (nos. 1, 4, 7, 10, 14, 15, 16, 20, 21, 22, 27, 28, 29). Others explicitly refer to the sex of the person designated (nos. 2, 3, 5, 6, 8, 9, 11, 12, 17, 18, 23, 24, 25, 26). In a few cases the sex is fixed in opposition to the sex of the speaker (nos. 13, 19). In nos. 7a and b, 10a and b, and 16a and b the explicit sex reference is a purely secondary feature.

2. In a considerable number of cases the sex of the speaker is taken account of. These are: nos. 5 (in vocative), 10, 11, 12, 13 (conditionally), 17, 18, 19 (conditionally), 20, 21, 22 (conditionally), 27.

3. The sex of a connecting relative or of connecting relatives is considered in nos. 5 ("father's brother"), 6 ("mother's sister"), 7 ("child of sibling of same sex as speaker"), 8, 9, 10 (conditionally), 11 ("nephew, niece"), 12 ("nephew, niece"), 13 ("nephew, niece"), 14, 17 (conditionally), 18 (conditionally), 19 (conditionally), 20 (conditionally), 21 (conditionally), 22 (conditionally), 23, 24, 25, 26, 27 (conditionally). It is particularly noteworthy that the sex of the connecting relative (father's or son's generation) does not count in nos. 2, 3, and 4.

4. Reciprocity is illustrated in nos. 11, 12, 13, 14, 15, 16, 17, 18, 19, 28, 29. Not counting the last two terms, which are hardly relationship terms proper, it will be noticed that all these reciprocal terms, except *läme* (no. 16), are terms of the same generation. Reciprocity in nomenclature does not obtain, as it so often does in America, between grandparents and grandchildren, nor between uncle-aunts and nephew-nieces.

5. The distribution of the terms for "uncle" and "aunt" and, reciprocally, for "nephew" and "niece" is conditioned by whether or not the siblings of the older generation are of the same sex. If they are, the "uncle" is merged with "father" (no. 5), the "aunt" with "mother" (no. 6), the "nephew" or "niece" with "child" (no. 7). If not, special terms are used, "paternal aunt" (no. 9), "maternal uncle" (no. 8), and "cross-sibling's[1] child"

[1] "Cross-sibling" means "woman's brother" or "man's sister."

(no. 10). A natural consequence of this distribution of terms is the classification of cousins into "siblings" (nos. 11, 12, 13) and "cross cousins" (no. 14). Whether these facts are explainable on the basis of the exogamic phratry organization of the Tsimshian tribes, as would be currently assumed, or of the levirate, is not clear. Perhaps neither factor is the historically primary cause.

6. The distribution of terms for "uncle's *or* aunt's spouse" and, reciprocally, for "spouse's niece *or* nephew" is somewhat curious. The maternal aunt's husband is classed with the father (no. 5); reciprocally, the wife's sister's child with one's own child (no. 7). The paternal aunt's husband is designated by a descriptive term, "husband of paternal aunt" (no. 26), to which corresponds, as reciprocal, a descriptive term, "cross-sibling's-child of wife" (no. 27). The maternal uncle's wife is classed with the paternal aunt (no. 9); reciprocally, the husband's sister's child is classed with one's cross-sibling's child (no. 10). Finally, the paternal uncle's wife is classed with the mother (no. 25); the corresponding reciprocal term for the husband's brother's child is classed with one's own child (no. 7).

7. Somewhat unexpected is the distribution of terms for "sibling's child-in-law" and, reciprocally, for "parent-in-law's sibling." The child-in-law of the brother or sister is consistently designated by purely descriptive terms (nos. 20, 21, 22). The reciprocals, however, are only partly analogous. The sister of the parent-in-law is descriptively defined (nos. 23, 24), but the brother of the parent-in-law is merged with the parent-in-law (no. 16).

8. The fairly extended use of transparent descriptive terms (cf. English "father-in-law") is noteworthy (nos. 20, 21, 22, 23, 24, 26, 27). Analogous formations occur further south in Washo and in certain Shoshonean systems. That these terms are to be looked upon as genuine terms of relationship, not merely as formations *ad hoc*, seems to be indicated by the fact that their range of actual significance is more restricted than that of their etymological significance (see note to no. 23; also supplementary note 3, p. 261). Thus *g̱ɪmxdɪł lä'mc-ɪ'* "my father-in-law's sister" (no. 23) has a far wider etymological significance, as it might also refer to "my

son-in-law's sister, daughter-in-law's brother, mother-in-law's brother." Of these three relationships, however, the first two fall outside the circle of recognized affinity, while the third is merged with the parent-in-law.

Summarizing the most striking peculiarities of the Nass River system of terms of relationship, we may point out that it:

1. Makes considerable, but by no means exhaustive, use of the principles of reciprocity and of sex differences in speaker, person designated, and connecting link.

2. Rather frequently merges lineal with collateral kindred.

3. Confuses, to at least some extent, relations of affinity with relations of consanguinity.

4. Makes some use of transparently descriptive terms.

5. At no point recognizes the principle of seniority which is all but universal in aboriginal America (*e.g.*, "older brother" and "younger brother").

6. Possesses a number of distinctive vocative terms.

IV. Supplementary Notes Due to Mr. P. C. Calder

To 1. Neither Mr. Calder nor Mr. Matheson seemed very familiar with the term *'o·''ls*. "Grandfather" and "grandmother" are generally used instead. Mr. Calder has heard *'o·''lsɪ'* used among the *Gu̱laxt'ä·'mɪkc* band, further up the river, and is inclined to think that the term was originally confined to the upper villages, there having been old dialectic differences among the Nass River people that are now ironed out. This hardly seems likely in view of of the fact that the term *'o·''ls* was easily remembered by Chief Barton, of Kincolith, which is at the very mouth of the river, and has been obtained for Tsimshian proper by Dr. Boas (through Nahum Tate) and by Mr. Beynon. When the Tsimshian terms were obtained, Mr. Matheson remembered hearing *'o·''wls* used in his childhood for "great-grandmother," but was not certain whether it also applied to "great-grandfather." Mr. Calder claimed that if it was necessary to distinguish the "great-grandparent" from the "grandparent," it could be done by referring to the latter as "my great grandfather" (*'wi·t'e'sɪm niyɛ''e'i*) or "my great grandmother"

('*wi·t'e'sɪm nt'se·'ᵉt'sɪ*'). It is difficult to believe that these paraphrases are anything but modern imitations of the English terms, though Mr. Calder claimed they were old Nass River usages.

To 2, 3. Mr. Calder claimed that in the old days the maternal and paternal grandparents were distinguished, but he does not remember how this was done.

To 5. The term *pä·p*ᶜ can also be used with the possessive suffix: *pä·'bɪ*' "my father" (male speaking), but only as a vocative, not as a term of reference. The term *hädɪ·'*ᵐᵢ evidently has the first person singular possessive suffix. Mr. Calder fancied this term was derived from *hä·t*ᶜ, the word for "intestines," but this is simply an example of folk-etymology. Mr. Matheson gave similar folk-etymologies for the Tsimshian terms for "grandfather" and "grandmother," which he has learned from an old Tsimshian. Both of these Indians claimed that the older members of their tribes knew the "real" meanings, *i.e.*, the supposed etymologies, of all the kinship terms. The existence of such folk-etymologies for kinship terms is itself an interesting fact. The probable etymology of *hädɪ·'*ᵐᵢ has been suggested to me by Miss Theresa Mayer. The fact that the same non-vocative form for "father" is used by both males and females in Nass River and Tsimshian (Dr. Boas states that Tsimshian *a·b* is used by women only for "father," but this is incorrect; *ä·'bo* "my father" is an obsolescent term indicating great respect and used by both sexes) and, further, the fact that the Tsimshian vocative does not seem to distinguish the sex of the speaker make it likely that the Nass River usage is a secondary one. The word *hädɪ·'*ᵐᵢ cannot be explained by reference to anything else in Nass River or Tsimshian. It is altogether likely that it is simply borrowed from the Haida vocative *ha·da·'i*, used by a female child in addressing its father. This term is evidently simplified from the regular vocative, *χa·da·'i*, of Haida *χa·t-ga*, *χa·d-*, the term for "father of female." The Haida differentiation of "father" according to the sex of the child applies to both vocative and non-vocative forms. This would be but one of several facts tending to show that the Haida had closer cultural relations with the Nass River people than with the Tsimshian proper. The Nass

River problem is complicated by the existence of a phonetically similar term in Upper Lillooet: *hä'lɛ* "father" (vocative only, apparently for both sexes).

To 6. This term includes also the "father's brother's wife." No. 25 rests on a misunderstanding. The term *nɔ'χ^{a}i'* (*nɔ'χ^{a}i'*) is simply a diminutive or endearing form of the more formal *nω·''^{i}*. This *nɔ'χ^{a}i'* "my little mother" is not only used endearingly for the mother, mother's sister, and father's brother's wife, but also, by a curious reciprocal usage, for the child or grandchild of an affectionate mother or grandmother. In the latter sense it can only be used by a female.

To 7a, 7b. The term *nä·''ä'* is also used in a wider sense. It may be employed by any man or woman in addressing a male to express great regard and affection. The term *dä·l* is used analogously, except that it may be employed by a woman only. There are also two terms of reference, not used as vocative or with possessive suffixes, for "boy, son" and "girl, daughter." From birth up to the time that he is given a name, the son of a family is referred to as *gɪnɛ·''^{ɛ}s;* from birth up to the time that the first mark is made on her lower lip for the eventual insertion of a labret, the daughter is known as *'aχq'e'l's*, literally "without a labret mark." These terms are paralleled by the Tsimshian *gɪnɛ·''^{ɛ}s* and *qa''^{u}s*.

To 15. According to Mr. Calder, *näkc* is not used as a vocative. The proper vocative usage for "spouse" is a teknonymous one. If the mother has a son or daughter young enough to be referred to as *gɪnɛ·''^{ɛ}s* or *'aχq'e'l's*, her husband will address her as *nɔχc gɪnɛ·''^{ɛ}s* or *nɔχc 'aχq'e'l's*, "mother of the boy!" or "mother of the girl!" Analogously, the wife will address her husband as *nəgwɔ·''^{ə}l's gɪnɛ·''^{ɛ}s* or *nəgwɔ·''^{ə}l's 'aχq'e'l's*, "father of the boy!" or "father of the girl!" When the spouses no longer have a son or daughter young enough to be referred to as *gɪnɛ·''^{ɛ}s* or *'aχq'e'l's*, they address each other as "father of so and so!" or "mother of so and so!", using the name of one or the other of their sons or daughters.

To 25. This term, as already noted, is simply a form of the word for "mother." See preceding note and note to 6.

To 28, 29. These terms were misunderstood. No. 29 is merely a collective form of 28; its meaning is "relatives all together." The terms do not specifically refer to blood-relatives, but apply to all relations, whether by blood or marriage. If necessary, the blood-relative may be distinguished as *ləp-wlä·'ɪck*^{u}, "self-relative, relative *par excellence*."

GEOLOGICAL SURVEY,
OTTAWA, CANADA

GAMES OF THE CALIFORNIA INDIANS

By A. L. KROEBER

THE endless games of the North American Indians have been reduced by Stewart Culin to a few fundamental types:

Games of Dexterity	With a dart	Outdoor	Hoop and pole
		Hand	Ring and pin
	With a ball		Shinny, lacrosse, etc.
Games of Chance	Pure chance		Dice
	Guessing		Hand or stick

Among amateurs, the guessing games come out entirely according to luck; among skillful players they depend on concealment and reading of facial and bodily expression, and are therefore in reality games of mental ability, or rather of will and character.

As a rule, all of these games were known to all the California Indians, and in many cases each game existed in only one form or variety in the same locality. The exceptions are so few that it would not be a very great distortion of the truth to say that every group played only five and substantially the same five games.

The hoop and dart game was perhaps the only one which was entirely unknown in some districts. The Yurok and Hupa did not possess it, and it seems to have been lacking also through the remainder of the northwestern part of the state. It is an interesting circumstance, illustrating again that the northwestern corner of California is ethnographically the last frontier of the North Pacific coast, that this hoop-and-pole game, favorite over a large portion of the continent, also holds but small part in the amusements of most of the coast tribes from Oregon to Alaska.

The dignity of this game is upheld at the opposite end of the state, where the Mohave deem it the means of gambling best befitting a man. They play it with a small string-wound hoop, and long poles that are slid so as to fall, if possible, on or under the rolling hoop when this finally comes to rest. The Luiseño and Diegueño,

the other tribes of the south, the Salinan and Costanoan groups, the Maidu; the Pomo, the Shasta, and the Modoc, followed substantially the same game. Among the Yokuts, Mono, and Miwok of the Sierra Nevada, youths and boys played a simpler and typically Californian variety. A small block was thrown or slid, and then poles darted after it.

The ring and pin or hand variety of the same game, in which several rings or loops are strung to the butt end of a peg on which they are to be caught, is widespread in California, but varies characteristically according to habits of life and, ultimately, environment. The salmon-fishing tribes of the northwest, as far south as the middle course of Eel river, including the Tolowa, Yurok, Hupa, Chimariko, Shasta, and Sinkyone, employed salmon vertebrae as "rings." On the headwaters of Eel river, where the streams run smaller and hunting largely replaces fishing, the Wailaki used deer bones. In the south, the Luiseño favored acorn cups; while the agricultural Mohave made their rings of pumpkin rind. The Klamath and Modoc employed a single-looped ball, made of the same tule rush that is the material of most of their industries. The Maidu and Yokuts did without this game, so far as known.

Of the many possible varieties of ball games, each group usually specialized on one. The Pomo played a kind of lacrosse, with a rude, small net. Still simpler rackets are found among the Southern Maidu. With the Miwok and Yokuts the net has degenerated into a mere loop at the end of a stick, serving to pick up or pocket the ball rather than bat it. Among both these groups this rudimentary form of the racket is perhaps due to the shinny stick being the standard form of ball-propelling implement. The Miwok women, but not the men, also batted a soft hair-stuffed ball with baskets resembling the utilitarian seed-beater.

The Mohave knew nothing of lacrosse, but clung to simple shinny, played with a small block or ball and plain curved sticks. With these they played as our boys play shinny or hockey on the ice.

It would have been difficult to find many suitable fields for such

an active free-running game in the rocky canyons of the northwestern tribes; even the bars and river benches are narrow, rough, and uneven. Here, accordingly, the game was played with a double ball of two string-tied blocks of wood, impossible to propel far by striking, and requiring to be picked up with the end of the stick and thrown. Manoeuvering thus took the place of speed, the players grappled like wrestlers, and a number of men could participate within a small area.

Elsewhere than in the northwest, the double ball game is essentially or wholly one for women, as over most of the continent. This is the case among the Shasta, Modoc, Achomawi, Washo, Maidu, and Miwok. Among the last three groups the "ball" has degenerated into merely the connecting string, though this is heavy and sometimes knotted at the ends.

Through most of the south, and along the coast as far north at least as Monterey, sticks or bats were dispensed with, and the game became essentially a foot-ball race. The contestants covered a long distance, each hurling, with his feet only, his little wooden ball. Speed and endurance were counted as even more valuable factors toward victory than skill in manipulation. Diegueño, Luiseño, Costanoan, and presumably the intervening groups competed in this way, which was familiar also to the Indians of Arizona. The Chumash, however, knew shinny; and in the interior the ball race had penetrated to the Maidu and Miwok. This latter people followed all the varieties of ball play: rackets for men and for women, shinny, double ball for women, and foot ball race.

Dice were everywhere preëminently if not entirely a woman's game. A set numbered four, six, or eight, each only two-sided; the count of the various combinations of pieces falling face up or face down, varied locally. The Yurok, Tolowa, Wiyot, and Hupa used four mussel-shell disks; the Pomo, Wailaki, and Northern Yokuts, six split sticks; the Mohave, Diegueño, and Luiseño four painted boards; the Southern Yokuts, Chumash, and Chemehuevi, filled walnut shells. Among the Miwok, split acorns were employed, and among the Mono, acorn cups. The Modoc used either the Californian sticks, or a northern type consisting of four beaver teeth. Some tribes played on a flat basket, others on a stone.

The ball game, whatever its character, was well fitted for competition between towns or districts, and was often heavily backed with stakes; but, except with the Mohave and perhaps the Yokuts,—who favored respectively the rolling hoop and the shinny stick,—the gambling game above all others, and therefore the man's game par excellence, among the California tribes, was the "hand" or "grass" game, a contest of guessing. Tremendous energy and concentration were thrown into this play, which was passionately followed. Songs and sometimes drumming were regular features, without which the stimulus to play hard would be weakened, and the contestants' luck magically diminished. Actually, the singing and rhythmic swaying aided the player to conceal his knowledge of the location of the "ace" by enabling him better to control his expression.

A public ritual, a dance, even a mourning ceremony, could hardly take place without the accompaniment, at least at the conclusion, of the guessing game. It is hard for us to realize to the full the large degree to which this amusement—or occupation—entered into the life not so much of a professional class of gamblers as of all the California Indians. Their avarice, and the importance to them of their wealth, hardly allowed them to bet as recklessly, and to strip themselves as completely of all belongings on a run of ill luck, as some of the eastern tribes, with whom liberality rather than possession carried prestige; but they made up in the frequency, the duration, and the tenacity of their play.

Two types of the game occur, and these do not differ fundamentally. In the northwest, a bundle of twenty-five to fifty slender rods is used, one being painted in the center. These sticks are shuffled in sight of the opponent with a peculiar rolling twist, divided behind the back, and then shown, the middle portions concealed in the hands. After some deliberation, and frequent false or pretended starts, the opponent guesses for the hand containing the one marked stick, indicating his decision by pointing past the other hand. If he is right, he wins nothing but the privilege of playing; if wrong, one counter goes to the player, who shuffles again. An expert player always knows the place of the marked

rod among its many plain fellows, even behind his back, and frequently displays it alone against the pack in his other hand, to tempt his opponent to incline to the latter; or, divining the tendency of his mind, misleads him with a single unmarked rod.

The Shasta, the Northern Wintun, and the Modoc play like the northwestern tribes; but through the remainder of the state, from the Wailaki and Achomawi to the Diegueño, the implements are two small bones, or short sticks, one of them marked with a band. These are concealed in the two hands behind the back, under a mat, or often wound in two wisps of grass in view of the opponent, whence the popular American name of the game. Some tribes use only one small bone, guessing for the full hand; mostly they employ four, handled by two men on a side; the southern Indians usually attach string loops to pass over the fingers; but such differences do not seriously alter the course of the play.

The counters are everywhere sticks. Contrary to our custom, the Indians rarely begin with an equal number of markers on the two sides, but with a neutral pile from which winnings are allotted to this or that contestant. Only after this stock is exhausted, do they begin to win from each other; and the game continues until one side is without sticks. This may be an affair of minutes. But if fortunes are fluctuating and ability even, one contest may be prolonged for hours. If the losers, without a word, continue to play, they are understood to bet in the ensuing game an amount the equal of that which was staked by both parties in the first game. At least such is the Hupa custom.

Among the Mohave alone, so far as known, several varieties of the guessing game are played. One of these, shared by them with some of the tribes of the Southwest, is a smaller, informal affair pertaining to idle moments. A bit of stick is hidden in one of four little hillocks of sand. Dexterity of manipulation and perception seems the deciding factor rather than control of the features.

The Coast Miwok, some of the Maidu, and the Washo, played the regular "hand" game, but also guessed whether the number of a handful of manipulated sticks was odd or even. Among the Pomo the sticks were counted off by fours and the remainder

guessed at. This procedure is suggestive of a Chinese form of gambling, but the geographical compactness of the area over which this sub-type of guessing game is found suggests its distribution from a native origin.

The "four-stick game" is another local variety, which has been found only among the Lutuami, Achomawi, Northern Paiute, and Washo—all at least partly Californian—and possibly the Chinook of Oregon. Among most or all of these tribes it does not replace but occurs by the side of the usual guessing game. Two of the sticks are heavy, two short and thin. The guessing is for the order in which they are grouped under a basket or mat.

When one reflects that in reality chance is no greater factor in the standard forms of the guessing game than in the American national card game, the decisive element being the match of character against character, the fascination which the game exercises on the Indian's mind is easy to understand.

The economic basis of life and the estimation of the purpose of wealth among the Indians are so different from our own, that gambling, instead of incurring odium, was not only sanctioned but approved. Nevertheless the underlying human similarity of the emotional processes connected with the practice is revealed in a most interesting way by the common belief in a connection between success at play and in relations with the opposite sex: lucky in love, the reverse at cards, and *vice versa*, is our proverbial superstition. But the Indian, regarding, like the ancient Hebrews and ourselves, sexual affairs as normally destructive of supernatural or magical potency, draws in a particular case an opposite inference. Two Yokuts myths relate how the favorite hero of these tales, the prairie-falcon, was uniformly successful in winning all stakes, in the one case at shinny, in the other with the hoop and poles, until the coyote was induced to disguise himself as the victor and thus take advantage of the latter's wife. As soon as this misfortune, although unknown, befell the falcon, his luck turned, until he lost everything. The modern gambler would perhaps expect the opposite event.

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BOOK REVIEWS

METHODS AND PRINCIPLES

Primitive Society. ROBERT H. LOWIE. Boni and Liveright: New York, 1920. VIII, 463 pp.

Dr. Lowie and American ethnology are to be heartily congratulated on the appearance of this book which meets a long felt want. It is a contribution to sociology of great importance, for it gives us a comprehensive account of the characteristics of the ruder forms of human society by one who has himself, by work in the field, gained a clear view of the principles upon which they depend.

The book may be considered from two points of view. In the first place, it is a valuable record of the known facts concerning the different forms of social organization, marriage, kinship, rank, and government from different parts of the world. In the second place there is a definite point of view running through the whole in the light of which many problems of theoretical interest are discussed.

In the latter respect Dr. Lowie shows himself an adherent of the historical as opposed to what is often known as the evolutionary school of thought, and chooses Morgan's scheme of the evolution of human society as the special object of his criticism. On the vexed questions concerning the respective rôles of diffusion and convergence he takes a moderate position, one which does not bring him into open conflict with the prevailing dogma of the independence of American culture. Especially valuable on the theoretical side is his discussion of the priority of the family or sib.[1] He goes far towards proving that in America the sib is later than the family, or at least later than that form of social grouping which is often known to American ethnologists as the band, and gives much evidence to show that the sibless organizations have not passed through a stage in which they possessed sibs. On the kindred topic of the time-order of the different modes of descent of the sib, he adopts the view that the family has evolved, sometimes into the patrilineal, and sometimes into the matrilineal sib, and rejects the view that one has always preceded or succeeded the other.

I believe that I shall be paying the best compliment to Dr. Lowie's

[1] The "clan" of other writers.

work if I devote the major part of this review to criticism. I will begin with some comments on the book as a record of facts. Considering the wide field which it covers the number of omissions and errors is very small. In Oceania attention must be drawn to the omission of any reference to the *eriam* and *kimta* of Bartle bay in New Guinea, an omission especially unfortunate because these institutions furnish by far the most characteristic examples of age-grades and sexual communism in this part of the world. The omission is evidently due to lack of acquaintance with Dr. Seligman's book on *The Melanesians of British New Guinea* and is important because it has contributed to the acceptance, though in qualified form, of Schurtz's mistaken view that age-grades and men's societies are closely related to one another. The connection between age-grades and sexual communism both in New Guinea and among the Masai, and the absence of any such connection in the case of the secret societies of Melanesia, together with many other differences between the two kinds of grouping, suggest that in spite of a superficial resemblance, age-grades and men's societies belong to widely different categories of social institution.

In the references to Africa the omissions are more numerous and there are several somewhat serious errors. The generalization of Hahn that gardening with the hoe is woman's distinctive occupation is said to hold good of Africa, whereas as a matter of fact, men and women hoe the fields together among most Bantu peoples as well as in West Africa, while among some peoples, such as the Lendu of Uganda, the men work in the fields and the women do not. The fact that the men do not take part in horticulture among the Baganda while they do so among the more agricultural Bantu suggests that the division of labor in which women undertake the duties of horticulture is a relatively late result of the influence of the pastoral element of the Bantu peoples. Again, the statement that vendettas are rare in Africa is contrary to the facts, for many examples are to be found in such a work as Post's *Afrikanische Jurisprudenz*.

Some of the accounts of the Masai are misleading. Thus, a statement on p. 390 suggests that the smiths have sibs peculiar to themselves, whereas with one exception they are members of the same sibs as the rest of the people. It is also said that there is no suggestion of any racial differences between the smiths and the general body of the Masai. This does not agree with the opinions of Johnston and Elliot, both of whom connect the smiths with the Andarobo on the ground of physical similarity, an opinion strengthened by native traditions. Peculiarities

of the language of the smiths, especially in words concerning their trade, also point to a difference of origin.

In the more theoretical portions of the book no objection can be raised to the author's attitude towards the older and cruder views of Morgan and his followers concerning unilinear evolution. On the other hand, Dr. Lowie's views concerning the nature of the process of diffusion are open to criticism, and this matter is so important in relation to the attitude adopted towards the problem of the independence of American culture that it must be considered at some length. The criticism in this respect must centre round Dr. Lowie's use of the concept of borrowing. Throughout the book he continually speaks of the process by which one culture influences another as borrowing, and uses this term even when the influenced and influencing cultures are widely separated from one another. In several passages, too, he speaks of contact between widely separated peoples, thus implying an attitude towards diffusion which I have already criticised elsewhere[1] in a review of Dr. Wissler's book on *The American Indian*.

There is no doubt that certain elements of culture such as dances, songs and material objects, may be directly borrowed by one people from another, though even in these cases the process usually involves such modification of the transmitted object or institution as to make the term "borrowing" unsatisfactory. In the vast majority of the cases in which one culture influences another, even in its immediate vicinity, the process has a dynamic character which makes the concept of borrowing inadequate and misleading. Even if the term were suited to the transactions between neighboring peoples, it becomes wholly inappropriate when a culture is influenced by another coming from a distance. In his use of the term "borrowing," and in all his references to diffusion, Dr. Lowie fails to appreciate the most important features of the process by which the diffusion of culture acts as a stimulus to new developments, a process in which a new idea or a new technique sets up a change, the general direction of which, as well as many of its details, is determined by the nature of the incoming influence.

The limitation of the author's outlook which is produced by his dependence on only one, and that a relatively unimportant, mechanism of diffusion is well illustrated by his treatment of the relations between the sib-organizations of North America. Five different areas of distribution of this form of social organization are distinguished and the differences

[1] *Man*, vol. XIX, (1919) p. 75.

between them described. On account of these differences Dr. Lowie concludes that they, or at least four of them, are the results of separate processes of evolution and arose independently of one another. Various reasons are given to show that the people of one area have not "borrowed" from another although such borrowing is supposed to have occurred within each area.

One who takes a more dynamic view of the mechanisms of diffusion will readily accept Dr. Lowie's facts and yet be not at all disturbed in his belief in historical connection. Even if the social beliefs and sentiments underlying the sib-organization were carried to America only by one immigrant influence, the differences which exist are just such as might be expected. Thus, elsewhere there is definite evidence that the dual organization is independent of the sib-organization, and if moieties were already present in certain parts of America and absent in others when what I may call the "sib-idea" was introduced, we should expect to find just such differences in the relative importance of the moiety as exists among the Indians of the East and those of the Northern Plains. Or, the differences might be produced, though less probably, by the later introduction of the dual principle into the two regions. Again, the fact that in the east the sibs take their names from animals, while in the Northern Plains the people use nicknames for their sibs, would simply mean that for some reason the connection of the sibs with animals which is so frequent elsewhere, and was probably a feature of the introduced culture, failed to take root in the Northern Plains and was replaced by a nomenclature of a different kind. Once again, the special kind of ceremonial importance of the sib of the Pueblo tribes is not unknown elsewhere, and its presence, though in a specialized form, would be due to some feature of the Pueblo environment which led to the survival and accentuation of this feature of the sib-idea in that region. Lastly, the "crest" which forms the distinctive feature of the sib-organization of British Columbia becomes intelligible as an example of the development of totemism into heraldry which has almost certainly taken place elsewhere. The differences on which Dr. Lowie lays so much stress are capable of explanation on the lines of historical connection even if the sib-idea reached America only once, but they would be still more readily explicable if the ideas were brought on more than one occasion, and perhaps from different directions, not only, for instance, by way of the Pacific but by a pre-Columbian movement across the Atlantic by way of the Canary islands.

It is well to point out that in one sense such a process as I have out-

lined is one of independent evolution in different directions, but starting from one or more introduced influences. The question at issue is whether the independence has been complete or whether the basic similarity which underlies the points of difference does not depend on the presence of some common influence. The author's failure to appreciate the dynamic character of diffusion reveals itself also when he is dealing with similarities in place of differences. When features of American culture present points of close similarity with those of other parts of the world, these similarities are discounted because the view which seems to underlie the customs elsewhere is un-Indian. This is, however, a two-edged argument. The hypothesis of independent evolution rests upon the determination of customs or institutions either by the social or the geographical conditions of the locality in which the independent evolution takes place. Since Dr. Lowie discounts the importance of the geographical factor (see p. 129) it ought to be possible to show that the independent evolution has in each case been determined by social conditions. The similar custom elsewhere must also have been determined, however, by its social environment. If, therefore, there is the difference in social atmosphere which Dr. Lowie indicates by the attribute "un-Indian," he will have to explain why two different social atmospheres should have produced the similarities with which he is dealing. He has to explain, for instance, why the highly specialized connection of animal names with sibs should have arisen in the very different social atmospheres of America, Oceania, India, and Africa. One who takes the more dynamic view of the process of diffusion regards the presence of these different atmospheres, not as arguments against diffusion, but as a means of explaining why a certain set of beliefs and sentiments spreading over the earth produces customs and institutions which, while preserving a basic similarity, yet differ greatly in the nature of their details and in the other features of culture with which they are associated.

The fault which underlies the whole of Dr. Lowie's treatment of the spread of culture depends on his adoption of a far too mechanical and "simpliste" view of the process of diffusion, a view crystallized in the term "borrowing." This is responsible for his adherence to the dogma of the independence of American culture to which he clings bravely in spite of many admissions which would surely have opened his eyes if his outlook had not been obscured by his unduly simple view of the mechanism of diffusion.

In considering this subject it will be useful to begin with some of these admissions. Dr. Lowie tells us that he was not impressed by the

presence of the bullroarer in America, Australia, and Africa so long as the object itself was alone concerned, but when he finds that in all three places the object is used as a means of excluding women from ceremonial, he does not hesitate, in the light of our present knowledge, to accept diffusion as more probable than independent origin. In another place he remarks that it cannot be an accident that all the suggestions of the sexual dichotomy of society in North America are reported from the Pacific coast, this feature of the relation of the sexes being characteristic of the cultures which lie on the other side of the Pacific ocean. Again, he points out several resemblances (to which others could readily be added) in the institution of chieftainship in Polynesia and among the Indians of the Northwest, and only rejects the significance of the resemblance because of the general difference of character of the two cultures, an example of the argument which has just been considered. These examples show very clearly how Dr. Lowie has been influenced by the limitation of his outlook to the process of borrowing. His concessions are such as might possibly come into the category of borrowing, but do not impress one who takes the more dynamic view so much as the basic similarity between so many of the customs and institutions of North-America and those of other parts of the world. To one who takes the wider view these cumulative similarities are far more impressive than the wide distribution of a special kind of noise to frighten women.

I hope that my failure to deal sympathetically with one feature of Dr. Lowie's book will not be allowed to obscure my great appreciation of it as a whole. The views which I have criticised form only a minor feature of a book which will be of the greatest value to students as a record of early forms of social institution. If it is not greedy to ask for more where so much has already been given, I should like to express the wish that Dr. Lowie will give us another book dealing, in the same manner but more fully, with the facts and problems of the sociology of aboriginal America. It is a great merit of the present book that it supplements the invaluable work of Dr. Clark Wissler on *The American Indian* where that book is weakest. Dr. Lowie's book contains many instances of American sociology which the student of other regions of the earth would find it difficult to extract from the vast mass of material collected by the industry of American ethnologists. If Dr. Lowie would give us another book on American society, dealing, for instance, with the problems raised by the nomenclature of relationship and giving in more detail the evidence bearing on the time-order of different forms of social organization, he would confer a great boon on all those interested in thel history of social institutions.

W. H. R. RIVERS

The Social Evolution of Religion. GEORGE WILLIS COOKE. Boston, The Stratford Co., 1920. 416 pp.

Durkheim developed with brilliancy the thesis that religion is a social product, integrated with the social life. The application of this was limited, in his exposition, almost entirely to Australian life.

Cooke may be said to start where Durkheim left off. He shows us the application of this theory to the larger field of the religious life.

There is an excellent statement of Durkheim's view and an application of it to much of primitive ceremonial—initiation ceremonies, for example. Out of these may have come the mysteries. There is a discussion of myth and an insistence that the application of the theory 'ritual first myth later' has been overworked. There are examples of the social transmission of human experience, as also of the creative genius of social man. Into this social order the individual injects his impulses and concepts, sometimes with success, sometimes to no purpose.

If the religious life is an integral portion of the social life it follows that we can not have change or advance in the one without accompanying changes in the other; the religious will, moreover, in some sense keep step with the social, if it is to retain a place in the social scheme. This consideration doubtless suggested the order of the last six chapters, which deal respectively with Communal and Tribal Religion, Feudal Religion, National Religion, International Religion, Universal Religion, Religion as Cosmic and Human Motive. In his treatment of these themes the author is not so much concerned to show that the one has developed into the other as endeavoring to show that distinct types of religion may be recognized and that these types are well correlated with the respective states of society. Differentiation in social life has been accompanied with a differentiation in religious life, with a separation of religion from the rest of life. "Religion is dependent for its manifestations on the industrial, social, and political developments of a people. As these change the religion changes to meet the new conditions."

We think it safe to say that no book treating of religion has appeared since Durkheim published his "Elementary Forms of the Religious Life" which is so stimulating as the one before us. The author shows a balance and steadiness, a thorough knowledge of most of the great religious systems and of the speculations of writers on religion, which has been but seldom attained. Sanity is the penetrating tone, and every sentence is clear and telling. The chapters are excellently balanced and the argument is well put.

If the book is written 'for a purpose,' that purpose seems to be to

inspire a new religion. As man has made god in his own image, so he can remake him. The recasting must be in the language of the present age, not in that of the sixth century B.C., nor in that of the Augustan age when belief in prodigies and portents was the language of common thought.

> What man has made, man can make again. He has created many a spiritual world in the past, and he can build more stately mansions for the soul in the years to come. The old creations were visionary, largely unreal, of the substance of dreams, shot through with nightmare visions; but the newer realism of the spirit will be finer, with sounder basic foundations in human nature, and with loftier possibilities for the advancing of human interests. Religion, therefore, is not passing away, but coming into its own. It may, and doubtless will, lose the supernatural and the miraculous, its saints and its prophets; but it will gain in the multitude of its faithful men and women, in those who have the qualities of the hero, and who can give themselves unstintedly for the service of their fellows. We may welcome with joy the day of this new and more beauteous religion, for it means that what belongs to human welfare will grow marvellously in every part of the world, and among all the races of men.

This may not furnish much cheer to the orthodox. But those who have read the author through with sympathy will not have much orthodoxy to mix with cheer.

WILSON D. WALLIS

NORTH AMERICA

Preliminary Account of the Antiquities of the Region between the Mancos and La Plata Rivers in Southwestern Colorado. EARL H. MORRIS. (Thirty-third Annual Report of the Bureau of American Ethnology, pages 155–206, plates 31–75, figs. 1–11.) Washington, 1919.

This paper describes excavations carried out by Mr. Morris in the summers of 1913 and 1914 for the University of Colorado. The region investigated is a plateau bounded on the east by the Mancos river and on the west by the La Plata; or, archaeologically speaking, a part of the northern San Juan area lying between the Mesa Verde and Aztec districts.

The first section of the report concerns itself with certain ruins in Johnson cañon, an eastern tributary of the Mancos. The sites are cliff-houses identical, as the author points out, in everything but size with those of the Mesa Verde, so well known from the writings of Nordenskiold and Fewkes. The descriptions are detailed and accurate and the minor antiquities recovered are fully illustrated. There is one mis-

identification: the wooden object in pl. 47, described as the plunger of a fire-making apparatus is in reality the wooden foreshaft of a reed arrow, as are the two other specimens figured in pl. 44, *g*, *g'*. Dr. Fewkes in his report on Sprucetree House (Bull. 41, B. A. E., fig. 20) has also misidentified a similar foreshaft by calling it a "wooden needle."

The particular interest of the report lies in Part II, "Ruins on the Mesa." The admirably presented data may be very briefly summarized as follows: the sites lie on the crests of ridges; they consist of small, irregularly rectangular rooms placed side by side in single or double rows or in hollow rectangles; the long axes of all the groups run east and west. The bottoms of the rooms were sunk into the ground to a depth of from a few inches to two feet. The hard earth sides of these excavations were sometimes merely plastered, sometimes reinforced by lining them with upright stone slabs; in other cases shallow trenches were dug about the sides of the rooms and double rows of small slabs set into them as wedges to hold upright poles. Although these foundations vary somewhat in detail, the superstructures all seem to have been the same: thin walls of vertical poles, wattled together with osiers and daubed with adobe; the roofs supported by stout posts set at the corners of the rooms. There was never more than a single story. While no kivas appear, there are in the neighborhood of some of the villages depressions which are probably the remains of such circular subterranean rooms as were observed by Mr. Morris 70 miles further east; the latter had central firepits, but none of the other typical attributes of kivas. To the south of the buildings in each case there lay a refuse and burial mound; the bodies were placed flexed in shallow pits, and were accompanied by mortuary offerings of pottery. All the skulls from the graves on the plateau exhibited occipital deformation; those from two apparently similar, though unexcavated, sites (Long Hollow, nos. 22 and 23) in the valley of the La Plata were all undeformed.

The stone and bone artifacts from these "pole-and-mud" villages do not differ greatly from parallel types found in the cliff-houses; the manos and metates (fig. 6), however, seem to the reviewers to be of a less specialized type than those of the cliff-houses. The pottery, on the other hand, is unmistakably different in technique, form and ornamentation from that of the Mesa Verde cliff ruins and the large Aztec pueblo. The ware is coarse, much of it undecorated; the bowls have thinned rims (not square-edged as on the Mesa Verde), and a number of peculiar gourd-shaped vessels appear. The decorations of the painted ware are bold and free (especially on the pieces from Long Hollow) and show little of the conventional geometricism of late Mesa Verde ornamentation.

In summing up Mr. Morris concludes (p. 204) that the plateau remains are probably to be considered as belonging to the pre-Pueblo culture now generally conceded to have existed in the Southwest. In this we agree with him, for there is no doubt that his plateau sites belong to the same cultural horizon as do the ruins uncovered by us in northeastern Arizona and called "Slab-house" (Kidder-Guernsey, Bull. 65, B.A.E., pp. 41–45). Of the pottery from the two groups, the decorated ware is very similar and the cooking vessels with broad coils at the necks are identical. The houses found by us were oval rather than rectangular; and their superstructures were, partly at least, made of superimposed courses of adobe "turtlebacks" instead of "wattle-and-daub;" the slab foundations, however, were precisely the same. Furthermore, there was associated with one of our ruins a round subterranean room presumably similar to the round rooms that Mr. Morris records from his district.

The above identification of the two groups (Morris' pre-Pueblo and our "Slab-house") as closely related and therefore probably approximately contemporaneous, is interesting as showing that the two cultures were not strictly local ones. It also proves correct Mr. Morris' deduction that his sites are of earlier date than the Mesa Verde cliff-dwellings; for our "Slab-houses" were buried beneath cliff-house rubbish, and cross-finds of traded pottery enable us to state positively that the cliff-houses of our Kayenta region and those of the Mesa Verde were inhabited at the same time.

To return to a point of detail. Mr. Morris states (p. 204) that of 33 crania 11 are undeformed, but he fails to stress the fact that these 11 came from a single group of ruins (Long Hollow, see p. 194); nor does he mention what seem to be rather marked differences between the Long Hollow pottery and that of the plateau sites. The reader of the report cannot judge for himself whether or not these differences are constant, because the exact provenience of the pieces of pottery figured is not given in the plates, and a search of the text serves to locate only 21 of the 51 specimens illustrated. This is a really serious omission, for every scrap of data on the obscure early periods of pueblo history is of value and it is quite possible that Mr. Morris is dealing with more than one type of remains.

We emphasize the above because the designs on such of the Long Hollow vessels as are definitely located bear what seem to us very striking analogies to basketry designs. If this apparent resemblance proves on closer comparison to be a real one, it will be of great interest in throwing

light on the hitherto mooted question of the ancestry of Southwestern pottery. It was claimed by Cushing and Holmes many years ago that corrugated or coiled pottery, so typical of the Southwest, was the direct descendant of coiled basketry; this view was generally accepted and has often been quoted in works on the development of technology. The fallacy of this idea was pointed out by Mr. Morris (Amer. Anthrop. N.S., vol. 19, pp. 24–29); and the reviewers, working independently, reached the same conclusion (Bull. 65, B.A.E. p. 141). Technologically, then, Southwestern pottery is probably not descended from basketry; but, on the other hand, we now seem to have evidence that on the artistic side the earliest pottery may owe something to basketry. It should be remembered, in this connection, that the "Basket-makers," the oldest Southwestern people of which we so far have knowledge, had apparently no pottery, but made excellent and well decorated baskets; furthermore, they, like the Long Hollow people (whose pottery designs seem to us to suggest basketry prototypes), did not practise skull deformation. Some connection between the two cultures may be suspected.

While the above is, of course, more or less speculative, it is susceptible of proof or refutation by continued field-work on the lines along which Mr. Morris has made so promising a beginning. The origin and development of the Pueblo culture form the one problem in North American archaeology which, because of abundant remains and favorable climate, we have reasonable hope of tracing out clearly in all its technological details. The present paper gives us a wealth of data on one of its most obscure phases. It is to be hoped that Mr. Morris, whose knowledge of the archaeology of the San Juan is unrivaled, may be enabled to continue his most fruitful researches.

A. V. KIDDER, S. J. GUERNSEY

SOME NEW PUBLICATIONS

Aranzadi, Telesforo de. El Tetraedro facial. (Facultad de Ciencias de la Universitad de Barcelona: Publicaciones de la Seccion de Ciencias Naturales, 1918, pp. 57–62.)

——. El Indice de Altura del Triángulo facial. (Boletin de la Real Sociedad Española de Historia Natural, vol. XVIII, 1918, pp. 67–73.) 1 fig.

——. El Triangulo facial de los craneos vascos. (Memorias de la Real Sociedad Español de Historia Natural, vol. X, pp. 359–404.) Madrid, 1917. 14 figs., 1 pl.

——. Craneometría de un Escafocéfalo Guipuzcoano. (Asociacion Española para el Progreso de las Ciencias: Congreso de Sevilla.) Madrid: Eduardo Arias, 1917. Pp. 11–33, 8 figs.

Aranzadi, Telesforo de. Barandiaran, Jose M De; Eguren, Enrique de. Exploracion de Nueve Dólmenes del Aralar guipuzcoano. San Sebastían: Martin, Mena and Co., 1919. 51 pp., 1 map, 29 pls.

——. (same authors). Exploracion de Seis Dólmenes de la Sierra de Aizkorri. San Sebastian: Martin, Mena and Co., 1919. 47 pp., 1 map, 5 figs., 23 pls.

Beckwith, Martha Warren. The Hawaiian Romance of Laieikawai. (Thirty-third Annual Report, Bureau of American Ethnology, pp. 285–666.) Washington, D. C., 1919.

Breton, A. C. Relationships in Central America. (Man, vol. XIX, 1919, pp. 186–192.)

Carpenter, Edward. Pagan and Christian Creeds: their Origin and Meaning. New York: Harcourt, Brace and Howe, 1920. 319 pp.

Créqui-Montfort, G. de *and* Rivet, P. Linguistique Bolivienne: La Langue Mobima. (Journal de la Société des Américanistes de Paris, vol. XI, 1914, pp. 183–211.)

Fewkes, Jesse Walter. Designs on Prehistoric Hopi Pottery. (Thirty-third Annual Report, Bureau of American Ethnology, pp. 207–284.) Washington, D. C., 1919.

Fox, C. E. Social Organization in San Cristoval, Solomon Islands. (Journal of the Royal Anthropological Institute, vol. XLIX, 1919, pp. 94–179.)

Gilmore, Melvin Randolph. Uses of Plants by the Indians of the Missouri River Region. (Thirty-third Annual Report, Bureau of American Ethnology, pp. 43–154.) Washington, D. C., 1919.

Grünwedel, Albert. Alt-Kutscha; archäologische und religionsgeschichtliche Forschungen an Tempera-Gemälden aus Buddhistischen Höhlen der ersten acht Jahrhunderte nach Christi Geburt. 25 colored plates, 7 pls., 160 ills. Otto Elsner: Berlin in press, to be published in autumn 1920.

Hertwig, Richard. Haeckels Verdienste um die Zoologie. (Die Naturwissenschaften, Dec. 12, 1919, vol. VII, pp. 951–958.)

Hocart, A. M. Early Fijians. (Journal of the Royal Anthropological Institute of Great Britain and Ireland, vol. XLIX, 1919, pp. 42–51, 2 pls.)

Johnston, Sir Harry H. A Comparative Study of the Bantu and Semi-Bantu Languages. Oxford: The Clarendon Press, 1919. XI, 815 pp., 2 maps.

Marett, R. R. Psychology and Folk-Lore. Methuen and Co.: London, 1920. IX, 275 pp.

Morris, Earl H. Preliminary Account of the Antiquities of the Region between the Mancos and La Plata Rivers in Southwestern Colorado. (Thirty-third Annual Report, Bureau of American Ethnology, Washington, D. C., 1919, pp. 155–206.)

Paudler, Fritz. Cro-Magnon-Studien. (Anthropos, vols. XII–XIII, 1917–18, pp. 641–694.)

Pope, Saxton T. The Medical History of Ishi. (University of California Publications, American Archaeology and Ethnology, vol. XIII, no. 5, pp. 175–213.) Berkeley, 1920. Pls. 38–44, 8 figs.

Rivers, W. H. R. The Concept of "Soul-Substance" in New Guinea and Melanesia. (Folk-Lore, vol. XXXI, no. 1, pp. 48–69). March 30, 1920.

——. Psychology and Medicine. (The British Journal of Psychology, vol. X, pp. 183–193.) 1920.

Rutot, A. Un essai de reconstitution plastique des races humaines primitives. Brussels, 1919. 172 pp., 15 pls., 241 figs.

Sapper, Karl. Die Bedrohung des Bestandes der Naturvölker und die Vernichtung ihrer Eigenart. (Archiv für Rassen- und Gesellschafts-Biologie, vol. XII, 1916–18, pp. 268–320, 417–439.)

Saville, Marshall H. A Sculptural Vase from Guatemala. (Leaflets of the Museum of the American Indian, Heye Foundation, No. 1.) New York, September, 1919. 2 pp., 1 pl., 1 drawing.

Schmidt, P. W. Die Personalpronomina in den australischen Sprachen, mit einem Anhang: Die Interrogativpronomina in den australischen Sprachen. (Akademie der Wissenschaften in Wien, Philosophisch-historische Klasse, Denkschriften, 64, Band, 1. Abhandlung.) Wien: Alfred Hölder, 1919. 113 pp., 1 map, 5 tables.

Werth, E. Der tertiäre Mensch; die Eolithen- und Vormenschenfrage. (Praehistorische Zeitschrift, vol. X, 1918 pp., 1–40.)

Wilson, E. N. The White Indian Boy. The Story of Uncle Nick among the Shoshones. Revised and edited by Howard R. Driggs, Professor of Education, University of Utah. Yonkers-on-Hudson; World Book Co., 1919, XI, 222 pp.

Wissler, Clark. Arctic Geography and Eskimo Culture: A Review of Steensby's Work. (The Georgraphical Review, vol. IX, no. 2, pp. 125–138.) February, 1920.

DISCUSSION AND CORRESPONDENCE

Comments: "The Central Arawaks"

In a recent issue of the *American Anthropologist* I came across a favorable notice of Professor Farabee's work on the Central Arawaks of British Guiana, *i.e.*, the Wapisianas, the Altarois, and Tarumas. Unfortunately, however, it has been reviewed by a gentleman without either intimate or personal knowledge of the subject, and hence many an error has unfortunately remained unnoticed. It is to remedy these defects and to prevent them remaining on record as authoritative that I feel myself forced to take up my pen, and much against the grain, to write a few lines of destructive criticism.

The temporary shelters made by the Wapisianas are described as having their roof made of the long broad leaves of the troolie palm (p. 18), but this particular tree (*Manicaria saccifera*) does not happen to grow in the hinterland of our colony. So again, the cassava-press is said to be a wicker-woven cylinder made of closely plaited strips from the midrib of the long leaves of the cokerite palm (p. 21). As a matter of fact, the midrib of the *Maximiliana regia* is of such a stiff consistency as to render its application to such a purpose absolutely impossible, its main use being to supply darts for the blow-gun. The press is invariably made from the split stem of itiriti, etc., a species of *Ichnosiphon*. The cassava sieves (p. 22) and pack baskets (p. 22) are similarly never made from the midribs of the palm leaf, but from these split stems. That the Wapisianas ever learned the art of spinning and weaving cotton from the Macusis, etc., (p. 26), is likewise extremely improbable for Mr. Melville, who has spent upwards of thirty years of his life amongst these very same people, has never heard it mentioned by them even as a legend. The leaf of the pine-apple plant (p. 27) is certainly never used for fibre: the author is referring to the Kuruwa, Korowa, etc., the preparation of which fibre has already been thoroughly described by the reviewer, with illustrations in the *Journal of the Royal Anthropological Institute*. *Sipo* (p. 30) is the Brazilian term employed to denote bush rope. A very extraordinary mistake is the statement (p. 42) that the Arapaima (*Sudis gigas*) and Aimara (perhaps Haimara would be better) are fish not found on the Amazon side of the divide. Schomburgk, in the early forties, had already mentioned the great trade done in salted Arapaima

(the Warapaima of the Macusis) on the Amazon side, and its transport to the market at Para. The author describes a couple of methods of catching smaller animals and deer; in the former case by means of a loop placed in the runway through which the creature's head is supposed to pass, and in the latter by stretching a net across the path along which the deer is forced to run by setting fire to the grass behind (p. 53). Unfortunately neither of these devices have been hitherto seen or heard of in the whole of the area under consideration. Furthermore, on the same page the illustration of the birdtrap lacks the upper portion of the peg supporting the structure, and upon which the whole delicacy of the trap depends.

Again, the form of spring-basket fish trap, excellently illustrated no doubt, is unknown amongst all three tribes: it is met with amongst the Wai-Wais further to the southeast.

The value of the list of fish poisons (pp. 61–64) is inappreciable in view of the absence of any scientific identification of the plants so employed, although several of them have been already described, and it would have been preferable to defer publication of the whole work until those of the fourteen out of the twenty-four despatched for the purpose to the Department of Agriculture at Washington had come to hand. It is true that one or two of the poisons mentioned are traceable, but yet errors seem to have crept in here. *Puraunun* (p. 62) is certainly not a thistle, but an agave; the bulbs, and not the seeds of which are used as mentioned. *Haiarri* is undoubtedly a species of the universally used *Lonchocarpus*, and *Haiarri Kupa* (p. 63) is evidently intended for the *Haiarri* used or found in the river bays or bights, *e.g.*, (*Macusi Kuba*) of the Rupununi, etc., while *Haiarri bali* (p. 63) simply means a plant like or similar to (Arawak *balli*) the *Haiarri* itself.

The bibliography is far from complete, and it is certainly puzzling to know why the name of Roth, who so far has published nothing concerning the three tribes under review, should be included in it.

As to the remaining portions of the text, the present reviewer has the authority of Mr. Melville, to whom, and to Mr. Ogibrie, the Professor rightfully admits his main sources of information, for stating that the legends interpreted by him for the author are now scarcely recognizable, and that the Wapisiana vocabulary is hopelessly inaccurate. How much reliability can therefore be placed upon the grammar and language of the Central Arawaks? The author should remember that the history and language of any of our Guiana tribes is not to be picked up by a few months' cursory travel, with notes and queries obtained enroute, even when the expedition is backed by a lavish expenditure of money.

He has attempted too much in the comparatively short time at his disposal and the result has been a failure. There is one bright spot however to lighten up the background, and this lies in the excellence of the illustrations. One plate (No. VII) however requires explanation: here it is described as "Wapisiana women weaving a hammock" though the author has published the identical picture in a previous work (*Philadelphia Museum Journal*) where it is represented as showing Maopidian females. Which is correct?

WALTER E. ROTH

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ARE THERE EVIDENCES OF AN IROQUOIAN MIGRATION WEST OF LAKE ERIE?

IN the issue of the *American Anthropologist* for September, 1919 Mr. Langford described a village site on the Kankakee river in Illinois and called attention to the fact that its culture differed radically from that of other nearby sites.

Briefly summarized the site consisted of a deep deposit of black refuse earth which contained animal bones in large quantity and numerous artifacts made of stone and clay. Chert arrowpoints were abundant, it being estimated that fifteen hundred had been taken from the site. With a very few exceptions, which Mr. Langford considered intrusions, these points were all tiny, keen triangles without tangs or notches. Potsherds were very abundant. The fragments showed that the entire vessels were round bottomed, with constricted necks and narrow collars. Amongst the decorations on the fragments were notches on the rims, and a chevron arrangement of impressed lines. Amongst the bones of various food animals there were found numerous artifacts made from bone and antler. No European articles were disclosed, nor articles made of polished slate, such as the "butter-fly stones."

Mr. Langford called my attention to the peculiarities of this site after reading my article in the issue of the *American Anthropologist* for December, 1916, "The Characteristics of Iroquoian Village Sites of Western New York." He was struck with the similarity between the characteristics of Iroquoian culture and that of the Kankakee site. In his article he spoke of these resemblances and expressed his opinion that the deposit "represents an early stage of Iroquoian progress eastward." . . .

There is no doubt that he is entirely right in considering this site of Iroquoian origin. In my article I had noted as certain constants of

Iroquoian culture deep refuse heaps; abundance of articles made of bone and antler; the general use of small triangular arrowpoints; well made round bottomed pots decorated with bands of triangles filled in with parallel lines, making a sort of chevron design; and the absence of large notched points, and of polished slate articles.

Judged from these constants Mr. Langford's site is easily identified as Iroquoian. Its numerous triangular chert arrowpoints, its relatively numerous bone and antler artifacts; its chevron designs and its deep refuse heaps can be attributed only to some Iroquoian people; and there can be little doubt that this site on the Kankakee river far from the abodes of any Iroquoian nation during historic time is the site of a village of some nation of Iroquoian stock.

Although it is simple to establish the identity of this site as Iroquoian, it is far from easy to identify the particular nation which occupied it, or to explain its location so far from territory usually ascribed to the Iroquoian nations. There are two theories to account for the location, both sound, and one of these might identify the nation which occupied it.

During the first years of contact between the French and the most western member of the Iroquoian family, the "Neutral Nation," the French described the wars which at that time were being waged by these "Neuters" on nations of non-Iroquoian stock to the westward, the Mascoutins, and the triumphant return of Neuter war parties in 1638 and in 1643 with long trains of prisoners. It is entirely possible that during one of these wars a large Neuter war party established a camp in the enemy country and there persisted for a period long enough to lay down a deep refuse deposit; and it may be that the Kankakee site is such a camp.

It might be urged that the distance between the villages of the Neuters in Canada and the Kankakee river is too great for such a possibility. In 1651 when they were driven from their country by their fierce kindred, the Five Nations of New York, they were seated in the Canadian peninsula north of Lake Erie between the Grand river and the Niagara, with an advanced band of a few villages east of the Niagara. Nearly all these village sites are of post-European age, therefore long post-dating the site on the Kankakee river which is pre-European. But the Stone Age sites of the Neuters are much farther west, nearly every site of pre-European age being west of the Grand river and extending westward practically to the Detroit. From the Stone Age Neuter sites near St. Thomas and London to the Kankakee river the distance is nearly three hundred miles, a long distance for a war party to operate through hostile

country. Still, Seneca war parties from their villages two hundred miles still farther east devastated the country of the Illinois, operating through a much greater distance. The distance, therefore, does not preclude the possibility of the Kankakee site being of Neuter origin.

An equally sound theory, and withal a most interesting one, is that the Kankakee site marks a stop in the eastward migration of one of the members of the Iroquoian family. Mr. Langford mentions this possibility. If it be shown to be at least possible, it opens up a very interesting field of research in the country lying between the Kankakee and the Detroit; and every fact known about the migrations of the Iroquoian nations seems to strengthen this theory.

That the Iroquoian nations of Canada, New York, Pennsylvania, and Georgia migrated to these places at some comparatively recent time is well recognized; and that they drove away and dispossessed earlier inhabitants of different stock is equally well known. The migrations of some of these nations have been studied, and have been proved to be from the westward.

Systematic study of the Neuter sites by the writer has shown that these at least migrated eastward from the Detroit river. The Neuter villages west of the Grand river are all pre-European. The first evidences of contact with Europeans, which took place in the decade of 1615–1625, are to be found in the sites east of the Grand river; and all the sites on both sides of the Niagara river show evidences of much European influence. These villages were inhabited in the decade of 1640–1650. In 1651 they were overwhelmed by the Senecas and their allies; were driven back toward the west; and eventually united with broken fragments of the Hurons and others to form the Wyandottes.

Allied to these Neuters and probably an off-shoot of that nation were the Wenroes. These had pushed eastward across the Niagara ahead of the main body of Neuters, and had established themselves in three village groups, the most advanced of which was at Oakfield, only thirty miles west of the Genesee river, and thus almost in touch with the Senecas. In 1639 after a period of constant warfare with the Senecas, the Wenroes abandoned their villages and emigrated to the Huron country for protection from their ferocious kindred.

Amongst the nations speaking a dialect of the Iroquois tongue the Jesuit Fathers listed in 1635 a nation known to them as the Eries. This nation lived south of Lake Erie. Like the Neuters on the north of that lake they seem to have been slowly pushing eastward. Their latest village was at Ripley, New York, in the graves of which a few

European articles were found. Their earlier villages are much farther west, the nearest identified positively as Erie being at Willoughby, Ohio. This is pre-European. Others seem to be located between Cleveland and Toledo.

The Seneca Nation had entered their New York homes only a short time before the advent of the Europeans. Their movements from their latest Stone Age villages to their historic villages of 1687 are well known. Their earlier movements, which ended with their occupation of the country between Canadaigua lake and the Genesee river, are well marked by one line, possibly two lines, of hill top forts leading from the southward up the valley of the Genesee, thence from the westward over the hills of Cattaraugus and Chautauqua counties to a point south of Dunkirk, New York, where their culture seems to merge with an early Erian type. Certainly this nation then, migrated as did both the Neuters and the Eries, from the westward.

The migrations of the Andastes, the Tuscaroras and the Cherokees have never been studied. There seem to be evidences of similarity between the pottery of Stone Age Andastes and Stone Age Eries; and it is entirely possible that these Andastes were an offshoot of the Eries who entered the valley of the Susquehanna by means of some one of the branches of the Allegheny river.

Neither has there been any study of the early archaeology of the Hurons or the Tionnondadies, yet every evidence points to their immigration into their historic homes from the west. Certainly both were relatively late comers into a country occupied by Algonkian nations. Certainly advanced bands moved eastward during pre-European times and established themselves on the St. Lawrence river, where they were met by Cartier. Certainly in the eighty years intervening between the visits of Cartier and Champlain these bands moved southward into New York where they became known as the Mohawks, Oneidas, and Onondagas. These bands certainly came from the west as far as the St. Lawrence. There is no evidence that the main band of the Hurons came from the north, and their movement northward from New York would have been limited by Lake Ontario. Therefore there is good reason to suppose that they like the Neuters, came from the westward, across the Detroit or St. Clair river, into their historic seats in Canada.

Eliminating however as doubtful the possible movements of the Hurons and the southern confederations of the Cherokees and Tuscaroras, there is still indubitable evidence that there was a migration eastward of strong members of the Iroquoian family of nations, which were to crystal-

lize into the Neuter, Erie, and Seneca nations. The route of the migration of these nations at least seems to have been eastward from the head of Lake Erie, one band crossing the Detroit river and following the northern shore of Lake Erie, the other following the southern shore; and it is noteworthy that the characteristics of Iroquoian culture are as marked and constant at the most western and earliest of sites along this migration path as at the eastern and later end. From this we can only infer that this culture did not originate on either side of Lake Erie but was already fixed before the Iroquoian people had approached it.

The place of origin of these people is unknown. The movement of these nations however having been uniformly eastward so far as we know, and their peculiarities of culture having been fixed before they arrived at their historic seats in different parts of a wide stretch of country to which their eastward movement had brought them, it is fair to assume that there must have been an earlier movement which brought them to the head of Lake Erie, and that this movement must also have been from the westward. Their place of origin must then be looked for at some point to the westward of the Detroit river.

It is just at this stage of reasoning that the Kankakee site becomes of interest. It is west of the Detroit river, and therefore in a line with a possible eastward movement having that river as its eastern terminus. It is pre-European. It is undeniably of Iroquoian origin. There is then the possibility that it marks a stopping place of a band of some Iroquoian nation in its early eastward migration from its point of origin at some unknown western point.

Should this be true other similar sites may be expected to exist between the Kankakee river and the Detroit river. None has been identified, yet this may be due to the fact that northern Illinois, Indiana, and Ohio have never received any systematic study. An attempt to locate and identify any such possible sites would constitute a very definite piece of research work for archaeologists of that territory. This can be accomplished by an examination of existing local collections of Indian articles. Should this reveal any articles of the typical Iroquoian culture, triangular points, chevron designs on pottery, or an abundance of articles of bone and antler, the place of origin of these articles should be located and thoroughly examined and the results of the examination should be carefully compared with the constants of Iroquoian culture.

FREDERICK HOUGHTON

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Did the so-called Cliff Dwellers of Central Arizona also build "Hogans"?

Spreading west from the desert of the little Colorado river upward toward the pine clad slopes of the San Francisco mountains the evidence of an ancient population is everywhere apparent. Ruins of large pueblos and forts crown some of the cinder cones. Small isolated castles top the crags in the canyons. Cliff houses cower under overhanging ledges while the remains of small stone houses and pueblo-like groups of houses lie scattered over the gray plains among the cedars and the pines.[1]

Potsherds gathered from these sites have the same characteristics, black geometrical designs on a white slip, black geometrical designs on a red slip, corrugated ware and red bowls with polished black interiors. This complex of pottery has associated with it in the canyons, burials containing skulls showing a flattening of the back of the head. This is a characteristic of the cliff-dweller culture as described by Kidder.[2] The pottery except for the red bowls with the black interior is similar to that found by Kidder in the Marsh Pass region. A few potsherds similar to those described by Kidder as belonging to another type which he has called the slab-house culture have been gathered on some of the sites.

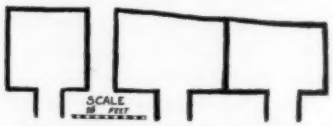

Fig. 14.—Plans of single and double vestibuled houses. The single houses scattered through the pine forests at the foot of the San Francisco mountains, over the sage brush plains and lava flows, and on the crests of the cedar clothed craters are common. The twin houses are rare and have been found in but two of the larger groups or villages. In both types of houses the characteristic feature is the vestibule or entrance on the south or southeast side. The houses figured here lie one quarter of a mile north of the Flagstaff City reservoir.

Among the ruins of pueblos and small houses at the base of the San Francisco mountains, in groups in the pine forest or in the cedar and piñon groves, usually overlooking a flat or a natural park, regular rows of boulders, strike the eye of the careful observer. Similar boulder sites have been described by Mindeleff in the neighboring Verde valley.[3] The rows of small boulders enclose squares ranging from fifteen to twenty-feet on a side. A characteristic of these squares, which has not been

[1] M. R. F. and H. S. Colton, "Little known Small House Ruins in the Coconino Forest," *Memoirs, American Anthropological Association*, vol. v, no. 4, 1918.

[2] Kidder and Guernsey, "Archeological Exploration in Northeastern Arizona," *Bulletin* 65, *Bureau, American Ethnology*, 1919.

[3] C. Mindeleff, "Aboriginal Remains in the Verde Valley, Arizona," *Thirteenth Annual Report, Bureau of American Ethnology*, 1891–1892, 1896, p. 237.

noted before, is that the row of stones forming the south or southeast side is broken by a gap about six feet wide and from this gap two lines of stones project perpendicular to the side of the square. (See figure 14.) When we consider that these squares are the plans of dwellings of some sort, the parallel walls beside the door suggest the vestibule of a house. Although these ruins are fairly common the writer worked two summers in the region before he recognized them as a distinct type.[1]

In north central Arizona two Indian tribes build earth lodges—the Navajo and the Havasupai. In common with the Navajo hogan our ruin shares the door on the southeast side. The size of the room more nearly approaches that of the hogan than that of the small stone houses that also dot the region. Except for the line of small boulders which mark the sites no trace of the building material exists. The ruins of a Navajo hogan is a circle of soil on the ground surrounding a depression. Our ruin is a square or rectangle of stones surrounding a depression. To this extent the two are similar.

The Havasupai, who by tradition give as their ancient home the San Francisco Mountain region, build hogan-shaped shelters of willow branches in Cataract canyon. On the plateau above, these shelters take the form of earth-lodges. Some of these are round and some square but none were seen where the ground plan would indicate a vestibule.

It might be well to note that the vestibule is regularly a feature of some round earth-lodges such as those of the Pawnee. From the evidence presented above we can infer that our dwelling like the Navajo hogan, was

[1] The largest groups are located as follows:

Two groups north of Flagstaff reservoir on the Schultz Pass road. Township 22 N-R7E Section 33. Twelve houses seven of which show the vestibule.

Babbitt pasture, two houses, Township 21 N-R7E Section 4.

Top of Turkey Tank Mt., one distinct house, five others indistinct. Township 21N-R9E, Section 11.

Dead man's flat, two houses distinct, three others indistinct. Township 24N-R8E, Section 29.

Dead man's flat, three houses, two distinct other indistinct. Township 24N-R8E, Section 28.

Dead man's flat, one house distinct, two others indistinct. Township 24N-R8E, Section 28.

Two miles south of Fortress Mt., two houses distinct. Township 21N-R9E, Section 22.

House in spatter cone SE of Red peak. Township 22N-R9E, Section 33.

Dan Francis estate, two houses. Township 21N-R7E, Section 9.

Elden spring, one house distinct, many indistinct. Township 21N-R7E, Section 11.

South of Dry Lake Mt. one house distinct, others indistinct. Township 22N-R7E, Section 34.

constructed of logs and earth; and that the body of the house was usually square, like some Havasupai lodges, and that a covered passage led to the interior similar to the entrance to the Pawnee earth-lodge. The evidence seems fairly conclusive that we are dealing with an earth-lodge of some sort.

The Navajo hogan and Havasupai shelters appear so have vestibules but the construction is such that the vestibule does not show on the ground plan. Another difference is worthy of note; the ground plan of our dwelling is usually square, not round. However, two round ones were discovered on Deadman's flat. In three instances our vestibuled houses were joined together by a common wall, but in these cases each room had its own separate door facing to the southeast. Such twin hogans the writer has not observed among the modern Indians of the Arizona plateau. Although the boulder sites about the San Francisco peaks differ from existing earth-lodges yet those differences are not great.

Besides the double or twin character of some of the houses, other variations were noted. Even though the door is almost invariably found on the south or southeast side, yet several cases exist were the door faces the west. In a group of houses, for they are most often found in small groups, the house farthest to the southeast has its door facing the other houses of the group. Abnormalities in shape have been recorded such as the two houses having round ground plans. In general the plans are fairly constant.

Trenches were dug through one house in an attempt to discover the fire-place, but the results proved indeterminate. About the San Francisco peaks the alluvial soil contains a large percentage of charcoal even to a depth of twenty feet telling the tale of ancient forest fires. Although charcoal fragments were obtained everywhere in the excavation no definite conclusion was reached as to the position of the fire-place. It seemed reasonably clear, however, that it was not in the center of the room.

Scattered over the sites of the earth-lodges are potsherds no different than those found in the pueblo ruins,—that peculiar kind of pottery complex characteristic of the cliffdweller culture. One can not help but conclude that the earth-lodges and the pueblos were built by the same people.

This is but a preliminary study. Since a few potsherds, similar to those figured by Kidder and Guernsey (*loc. cit.*) and referred to the slab house culture have been gathered on the sites of the earth-lodges it is

possible that a further study of the remains may throw light on that little-known culture.

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COMMENTS ON HANDBOOK OF ABORIGINAL AMERICAN ANTIQUITIES (HOLMES)

IN the interest of future readers of Prof. W. H. Holmes' *Handbook of Aboriginal American Antiquities* which has recently been distributed by the Bureau of American Ethnology, permit me to draw attention to the following surprising statements concerning the archaeology of Mexico and Central America, which challenge comment and criticism.

On page 26 under the sub-title "Mexican Analogies" the following statements occur: "Even more diversified and remarkable are the correspondences existing between the architectural and sculptured remains of Middle America and those of southeastern Asia. In both regions the chief structures are pyramids ascended by four steep stairways of stone bordered by serpent ballustrades. . . . . "

The truth is that the so-called pyramids of Mexico and Central America are in reality pyramidal mounds built up to serve as sub-structures for temples, which, in war-time, were used as strongholds. In order to render the sanctuary as inaccessible as possible and to facilitate its defense access to the summit was gained by a single steep stairway only, situated on one of the four sides, the other three being generally subdivided into several terraces the scaling of which was practically impossible.

The single stairway is a common feature of the chief structures of all of the principal ruined cities of Mexico and Central America, *i.e.*, Cholula, Teotihuacan, Chichen Itza, Uxmal, Palenque, Tikal, etc. In 1895 Prof. Holmes recognized the predominant use of the single stairway in his "Archaeological Studies Among the Ancient Cities of Mexico," which is justly prized by Americanists as a standard work of rare value and charm. In part I, on page 33, he figures eight examples of Maya terraces and pyramids, all with one stairway.

In the text on page 32, however, without citing examples, he states "It is not unusual to find two flights and three; and even four flights are known."

The contrast between this statement and his latest assertion that "The chief structures of Ancient Mexican and Central American cities are pyramids ascended by four steep stairways," seems inexplicable, for

no new stairways have been discovered on important pyramids since 1895 and all chief examples known, which are cited above, show the single stairway.

It is obvious that an analogy based on a resemblance between southeastern Asiatic pyramids with four stairways and obscure exceptional examples of similar American structures is valueless and misleading and out of place in a handbook.

The same must be said of the second analogy Prof. Holmes points out: "Temple walls in both countries are . . . surmounted by roof crests, cupolas of elaborate and even pagodalike design."

What documentary or archaeological evidence is known which shows that ancient Middle American builders ever constructed cupolas, *i.e.*, "hemispherical or semi-elliptical vaults on the tops of circular buildings?"

Under the sub-title "Whiskered Men in Yucatan" (also on page 26) Prof. Holmes points out a third analogy of an extremely doubtful character, which will remain so until he can produce proof that the so-called "whiskers" are not parts of ceremonial masks or headdresses.

It is indeed a pity that, when real and equally striking analogies between Central America and Cambodia, Burmah, and India do exist, those pointed out in the Handbook should require either substantiation or revision as do also other assertions scattered throughout the pages of what should be a standard reference book.

On page 126 the reader is informed that "the greatest of the American pyramids" (that of Cholula) "is 200 feet in height and 1400 feet square at the base . . . and is now occupied by a Catholic Cathedral." The truth is that the pyramid is surmounted by a church, the only cathedral in the state and diocese of Pueblo being the magnificent one in the city of Puebla, which is 323 feet long and 101 feet wide. According to the careful measurements made by A. F. Bandelier in 1881, quoted by Thomas P. Janvier in his guide, the lines of the base of the pyramid, including their irregular windings, measure are as follows: north line, 1,000 feet; east line, 1,026 feet; south line, 833 feet; west line, 1,000 feet. . . . The length of the upper plateau from east to west is approximately 203 feet; and its length from north to south, 144 feet. There is a steep ascent with a vertical rise of 71½ feet to the first terrace and a second with a vertical rise of 66 feet to the summit, making a total vertical rise of 137½ feet. It would be interesting to know on whose authority Prof. Holmes bases the exaggerated measurements he records. It cannot but also cause regret that at this more advanced stage of archaeological knowledge Prof. Holmes should hark back to the fancied resemblance between

the trunk of an elephant and the long curved noses of the human faces which decorate the facades and corners of some Maya buildings. Surely the absence of tusks and the broad mouths garnished with teeth which the Maya sculptors placed under the curved nose offset the latter's "insinuating way of suggesting the trunk of an elephant." Prof. Holmes' statement that "The upturned jaw of the mythical serpent is equally reminiscent of the treatment of the cobra jaw in the far East" appears equally misleading as it ignores the marked differences that also exist.

While fascinating, such "suggestions" and "reminiscences" seem out of place in a handbook intended to convey established facts to students. The same must be said of the illustrations represented as that of an "Ancient Wheeled Toy from a Child's Grave, Mexico" although Prof. Holmes admits that it was found by Charnay in a cemetery which also yielded brass bells. In view of the indications that the grave dated from after the conquest and the significant facts that no similar wheeled toys have been found in pre-Columbian graves and that no other evidence has been forthcoming to prove the use of the wheel in ancient America, one wonders why so unmeaning an illustration should have been introduced into the handbook and why the toy should be designated as "ancient."

In a handbook in which the section dealing with Mexican archaeology is so painfully meagre and behindhand one deplores that the space accorded to this toy could not have been allotted, for instance, to a mention of the beautiful and well-preserved little pyramid temple of Tepoztlan in the State of Morelos or some other noteworthy monument or antiquity.

Another misleading illustration occurs on page 353 where figures 214, 215, and 216 represent "primitive methods of drilling" by means of pointed stones, in order to make perforations. Into this group, a drawing representing an ancient Mexican priest lighting the sacred fire by means of a stick (a fire-drill) is introduced and labelled "Primitive Method of Drilling," giving rise to the natural but wrong inference that, as in the other cases, the drill also had a stone point and was being used for the identical purpose of perforating a hard substance.

I regret to have to draw attention to defects in a work which contains so much that is excellent and deserving of praise.

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MEXICO, D. F.

Notes on a Navajo War Dance[1]

The following notes were made at a dance which took place at Kayenta, Arizona in June 1914. They are somewhat fragmentary owing to the fact that features of the ceremony were going on in different places at the same time.

The sick man for whose relief the function was given, had, when a young man, looked upon the bodies of two Navajo who had been killed by the Comanche. His trouble arose from the idea that the evil spirits of these enemies possessed him, as it is said to be "bad" to look upon the body of a person slain by one's enemy. The ceremony was directed by a medicine-man who charged a large fee for his services.

The first part of the ceremony took place at a distance of about three miles from the hogan of the sick man, and had to do with the preparation of the "war wand." This wand consisted of the top of a cedar tree from which the bark and all the sprigs except a bunch at the top had been removed. About this stick tied with a deer-skin string, cut from the hide of an animal that had been strangled or smothered, were bunches of white and green sage, several turkey feathers, two eagle feathers, and a package of "medicine," nature unknown. The whole was decorated with long streamers of red cloth. This wand was carried throughout the entire ceremony, which lasted three days, by a young girl, and I saw her still carrying the wand as she rode away.

The part of the ceremony connected with the preparation of the wand that I saw, consisted of dancing by the men. The dance started about dark, continuing through the night and although there were several hundred Indians assembled at the spot, only a few took part in the dance, the greater number looking on or sleeping about the fires.

The dance consisted of singing by two groups of men who lined up facing each other, each line having a leader at the head who chanted in a high falsetto voice a verse which was repeated by his party in concert. The leader of the opposite side followed with a verse which was repeated by his band, and so on. The singing was accompanied by drums beaten by the leaders. The men in each line stood as close together as possible, the lines surging slightly in time to the drums, the dancers at times taking a few shuffling steps. Men were continually dropping out and others taking their places. Now and then I caught a glimpse of the young girl carrying the plumed wand. To all appearances the dance was a contest of endurance between the two lines of men.

[1] Cp. Franciscan Fathers, *An Ethnologic Dictionary of the Navaho Language*, St. Michaels, Arizona, 1910, pp. 366–376; E. C. Parsons, *American Anthropologist*, N.S., vol. XXI, no. 4 (1919).

At daybreak the dancers rode with a great firing of guns to a large brush house that had been erected near the hogan of the sick man. They were met a little way out by a party of horsemen also firing guns. This appeared to be a sham battle. Soon all the Indians were assembled around the hogan of the sick man; I saw him rushing about, very busy with final preparation. He looked perfectly well but somewhat dishevelled, as his hair was hanging loose. In the hogan of the sick man, two Indians, who were to enact the part of scouts, were being prepared with elaborate ceremonies that consumed nearly three hours. I was not able to gain entrance to the hogan but was told by Professor Cummings who was more fortunate that a good part of the time was spent in painting the bodies of these men, that frequently the attendants who did the painting paused, after using various pigments, to go through the motions

FIG. 15.—Upper left, dance circle; upper right, dance circle open to the east; lower left, painting wife of sick man; lower right, cleaning feathers to be worn by scouts.

of washing their hands in the sunlight that streamed through the smoke-hole.

At the same time that the "scouts" were being prepared, the wife of the sick man was receiving attention in a brush shelter just in front of the hogan. I was able to observe a part of this ceremony, as the shelter

had only a roof, though the Indians crowded about and made a clear view difficult at times. The wife sat facing the east with a blanket spread over her knees. At each corner of the blanket sat a woman attendant; at her back squatted an old woman who seemed to have charge of the proceedings. This old woman first drew a black line on the face of the wife extending from the ears around the lower jaw, after which black was applied to different parts of the body. Finally, the arms, legs, and practically the whole body of the wife was rubbed with powdered charcoal.[1] Occasionally as the painting proceeded the old woman would hand the wife some object which was immediately concealed by her under the blanket. An old Hopi bowl filled with some liquid of uninviting appearance was passed to the attendants, each taking a sip. It was afterwards handed to several women who seemed to be only spectators, who took a taste.

While these preparations were in progress 12 to 16 Indians, all men except the young girl with the war emblem and another girl about the same age, danced in a circle (fig. 15) about a handfull of ashes and a slender stick with a wisp of hair attached to it. This wisp of hair was from the scalp of a Comanche killed by the Navajo and had been obtained with great difficulty from a distant part of the reservation.

The dancers shuffled around to the singing of a leader, who also beat a drum made of a small pot with a piece of skin stretched across the top. At the end of each verse the dancers paused. In these stops the circle was always left open to the east; it seemed quite important that nothing should cross or obstruct the east. At one time several women started to ride over well out on the flat, but were warned back by a great outcry from both dancers and spectators. Another time horsemen were sent out to turn back some stock that would have crossed nearly two miles out.

Presently a very old man, nearly blind, came from the hogan, and, guided by an Indian who appeared to be the master of ceremonies, took the stick with the wisp of hair from the circle of dancers and carried it some 300 yards east across the flat, pausing once to make a motion like striking the ground or an imaginary enemy. At the end of this journey the old man's guide asked him in a loud voice, what his name was, but the old man being very deaf did not understand, and the question was repeated louder and louder at which the Indians looking on seemed greatly amused. Finally having received a satisfactory answer the guide returned to the hogan leaving the old man. The two scouts now emerged from the hogan wearing kilts or aprons of cloth, bandoliers, and bracelets of yucca leaves, and having feathers tied in their hair. Their bodies were

[1] According to the Franciscan Fathers, it is the patient who is painted black.

painted black. These men ran rapidly out to where the old man stood, performed some ceremony over the wand which he had placed on the ground, made motions to the sky with the hands raised palms upward, then ran back to the hogan. What happened after this I was unable to note, except that about this time gifts of cloth and other articles were thrown out through the smokehole of the hogan to be caught as they fell by a number of women who waited in line about the door. The remainder of the day was devoted to horse racing and other games.

The event closed with a girls' dance which started about 12 p.m. The belle of the ball was the bearer of the sacred war emblem which she still retained. The dance was performed thus: each girl selected a partner by force who must either dance or pay. Holding her partner by the arm or blanket she turned slowly backward with the man as a pivot, he exerting himself just enough to maintain their relative position and apparently requiring more or less urging for even this slight effort. Both wore all the time a bored expression, the man looking rather sheepish as well. How long this dance continued through the night I do not know, but I saw no change or pause in the three hours I watched it. The most exciting part of the entertainment was furnished by the horses which occasionally stampeded in bunches of a dozen or more and, blinded by the glare of the fires, ran over anything in their way.

There were six or seven hundred Indians present. A few formed a rather uninterested audience. The greater part, however, spent the the night eating or sleeping. From Mrs. John Wetherell I learned that the very old man who was led out on the flat was supposed to discover the enemy and give the alarm. The scouts then go out and locate the enemy, returning to guide a war party who surprise and drive them away, recovering at the same time a young woman who had been captured in a previous raid. The dance about the wand and lock of hair was a part of the rejoicing at the recovery and the success of the war party, though the sequence of these events do not seem quite in order. The young girl who carried the war emblem represented the rescued maiden.

These notes barely sketch the ceremony, a great many features of which I missed altogether. Others perhaps I misinterpreted from lack of knowledge.

I asked Mrs. Wetherell if the sacred war emblem might be obtained in any way but she said it would be considered a great affront to even suggest such a thing to the medicine-man. His wife however, allowed me to look at it and while I was thus engaged managed to steal my jackknife.

S. J. GUERNSEY

PEABODY MUSEUM,
CAMBRIDGE, MASS.

ANTHROPOLOGICAL NOTES

We regret to record the death of one of our honorary members Dr. Friedrich Wilhelm Radloff, Director of the Ethnographie-Anthropological Museum in Petrograd. Radloff was born in Berlin on January 17, 1837. A long sojourn in West Siberia enabled him to make those profound investigations of Turkic culture which established his scientific fame. Among his works may be mentioned the *Volksliteratur der nördlichen türkischen Stämme* (1896–1900), and *Aus Siberien* (1884, 2nd edition 1893). The latter is a sketch-book, but contains valuable accounts of the Altaian and Kirgiz tribes, a general account of West Siberian shamanism and a report of archaeological excavations.

Dr. Robert Munro, the well-known Scottish archaeologist, died on July 18, 1920 in his eighty-fifth year. His reputation rested particularly on investigations of European lake dwellings. An obituary appeared in *Nature* of July 29, page 685.

On February 18, 1920 the Anthropologische Gesellschaft of Vienna celebrated its fiftieth anniversary. During the past months a series of lectures has been given under its auspices under the caption "Rassen- und Kulturfragen der Menschheit." Among the speakers were Drs. Pöch, Haberlandt, and Oberhummer.

Mr. Alvin H. Dewey, President of the Morgan Chapter of the New York State Archaeological Association, has been conducting field-work near Rochester Junction, New York. Among other finds of interest, a pottery jar of Algonkian type was unearthed by Mr. Dewey in what seems to have been a Seneca Iroquois grave. The vessel may have been made by some Algonkian captive of the Seneca.

Mr. Arthur C. Parker, New York State Archaeologist, has been continuing his exploration of the early historic Seneca stronghold at Boughton hill, near Victor, N. Y. Two pottery jars of the degenerate period of plastic art among the Seneca, which just preceded the abandonment of the manufacture of ceramics by that people, were discovered; several bone combs, some of them of unusual form, were likewise obtained.

DR. WM. R. BLACKIE, who is conducting an archaeological survey of Westchester county, New York, for the Museum of the American Indian, Heye Foundation, has located a hitherto unknown village site of the Siwanoy in the International Gardens, near Pelham Bay, and has found skeletons and a number of interesting specimens.

MR. ALANSON SKINNER of the Museum of the American Indian, Heye Foundation, spent part of the months of June and July at Keshena, Wisconsin, among the Menomini Indians, gathering data on their material culture.

DR. S. A. BARRETT of the Public Museum of the City of Milwaukee is still engaged in the exploration of the great walled site and mounds at Aztalan, Wisconsin.

PROFESSOR HEINRICH CUNOW, known in this country for his book on the social organization of the Australians and an essay on the Inca state, has been appointed curator (*Director*) of the South American division of the Berlin Museum für Völkerkunde.

PROFESSOR EDUARD SELER, who celebrated his seventieth birthday on Dec. 5, 1919, was elected to honorary membership in the Anthropological Society of Berlin. This organization also elected the following corresponding members: F. Sarauw (Gothenburg); Robert Lehmann-Nitsche (La Plata); Emil Fischer (Bucharest).

DR. OTTO RECHE, known for his researches along the Kaiserin Augusta River, New Guinea, is lecturing on ethnography at the new University of Hamburg.

DR. LESLIE SPIER made a brief trip to the Diegueño under the auspices of the University of California.

PROFESSOR FRANZ BOAS spent several weeks in the Southwest to continue his investigations of the Laguna language.

PROFESSOR GEORG THILENIUS has been elected Rector of the University of Hamburg.

DR. T. T. WATERMAN, who has been connected with the University of Washington at Seattle for some years, has returned to the Department of Anthropology of the University of California.

DR. LESLIE SPIER has accepted a position in the University of Washington where he will have charge of the courses in anthropology.

MR. ALANSON B. SKINNER, who has been a member of the staff of the Museum of the American Indian for some years, has resigned to accept a position in the Museum at Milwaukee.

MR. N. C. NELSON and Mr. B. T. B. Hyde of the American Museum of Natural History left New York September 16th for a visit to the ruins of Grand Gulch, Utah. This work is in continuation of the Hyde Expedition of twenty years ago. The present expedition is provided for and accompanied by two friends of the Museum.